Manufacturers Record

Reg. U. S. Patent Office

JUNE 1933

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INCREASED BUYING POWER

The rise in commodity prices of the past few weeks has added more than $500,000,000 to the buying power of the Southern States.

Compared with the average price of last year, Southern farmers, at the present price level, will receive approximately $454,000,000 more for their crops and livestock products than they realized last year.

Ten cent cotton is in sight. Should a comparatively small crop be produced this season, the price is expected to go above 15 cents a pound. Even if cotton remains between 8 and 9 cents a pound there will be a good profit for the grower. A 12,000,000 bale crop at that price will bring $250,000,000 more to the South than last year's crop brought. In addition, growers are holding a large quantity of cotton which was produced at the lowest cost perhaps in 50 years. Indications are that this year's crop will be produced at an equally low cost.

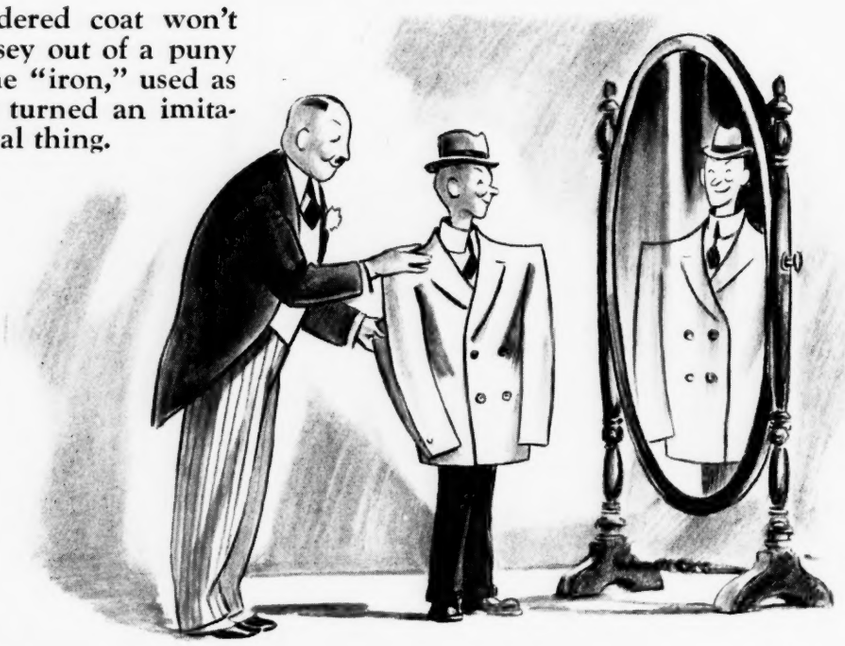
With the price trend upward in cotton and other farm products there is a sound basis for optimism throughout the South which will have a marked effect in stimulating every line of industry and business. Results of this stimulation are in evidence.

Textile activity is at the highest point in many months. With increased employment, and higher wages being paid by some mills, business throughout the South is showing a definite forward movement.

Iron and steel, lumber and other lines of industry have been increasing their operations and their payrolls, all of which adds to the South's buying power.

The 17 per cent gain in farm prices since March 15 has given new encouragement to every farmer in the United States. The upward trend in raw material prices has given new hope to producers of wealth from the soil, forest and mine. With these producers of basic materials again in a position to become buyers every business in the country will benefit.

a broad-shouldered coat won't make a Dempsey out of a puny man. The name "iron," used as a cloak, never turned an imitation into the real thing.



When You Need REAL Iron—

Be Sure That You Get It!

There are certain pipe installations that demand pipe made of real iron—genuine Puddled Iron, such as Reading makes. In these installations, no substitute metal, no pipe which merely calls itself iron, will do the job so well. For genuine Puddled Iron is unique in its ability to resist a *combination of destructive forces* longer than any other metal.

Reading Puddled Iron Pipe has been known and used since 1848. It has established records of endurance that are unequalled. It has received harder punishment, more thorough testing in actual service than any other kind of pipe. That is why you are SURE of satisfaction and economy when you use it for installations in which it can serve best.

● *For Underground Service Connections*

In acid or alkaline soils, Reading Puddled Iron Pipe pays for itself many times over in freedom from repair and replacement costs. Under electrolytic action—the destroyer of all metals—Reading Pipe is the *least* affected.

● *For Cold and Hot Water Lines*

Reading Puddled Iron Pipe assures *generations* of trouble-free service with all ordinarily corrosive waters. In thousands of such installations, it has been proved that the life of Reading Pipe is from two to five times longer than that of ordinary pipe.

● *For Drains*

Alternating wet and dry conditions often mean swift death for most kinds of pipe. Reading Puddled Iron Pipe is especially adapted to give long service under such conditions.

● *For Heating Supply Risers, Distributing Mains and Return Lines*

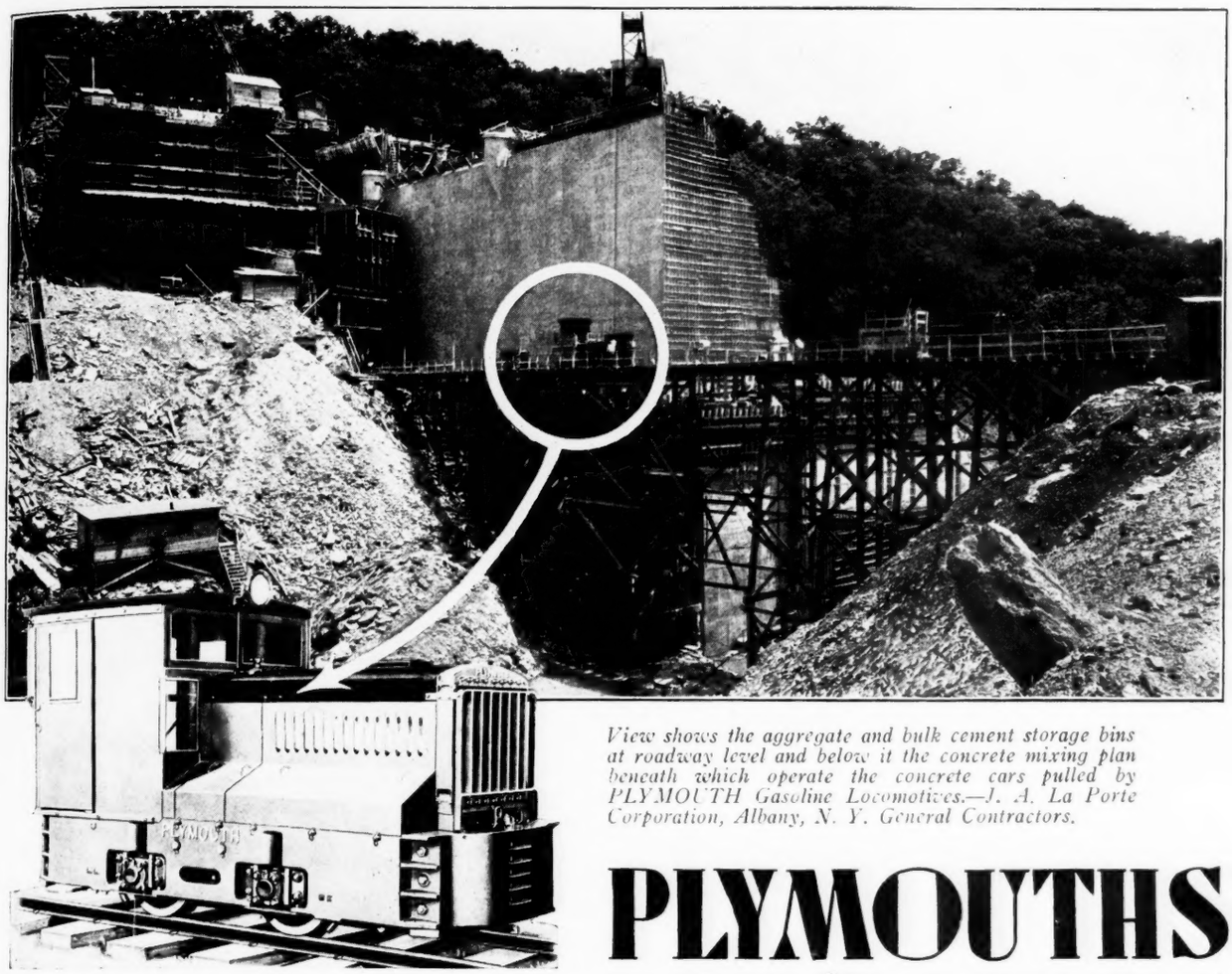
Due to its high melting point (300 Degrees F. higher than that of steel) and because of the presence of non-metallic silicate, Reading Puddled Iron is far less subject to destructive oxidation than other ferrous metals.

SINCE 1848

READING IRON COMPANY PHILADELPHIA

Science and Invention Have Never Found a Satisfactory Substitute for Genuine Puddled Iron

Entered as second-class matter at the postoffice, Baltimore, Md., under the act of March 3, 1879. Volume CII, No. 6. Monthly.



View shows the aggregate and bulk cement storage bins at roadway level and below it the concrete mixing plan beneath which operate the concrete cars pulled by PLYMOUTH Gasoline Locomotives.—J. A. La Porte Corporation, Albany, N. Y. General Contractors.

PLYMOUTHS were in constant service at the Pretty Boy Dam!

Pretty Boy Dam, Baltimore's new secondary water reserve, adds 20,000,000,000 gallons of water to the present supply. Here two 8-ton PLYMOUTHS were in constant and satisfactory service since April 1932, hauling concrete cars back and forth on the wood trestle on the upstream side of the dam to deliver the aggregate concrete from the mixers to the hoppers.

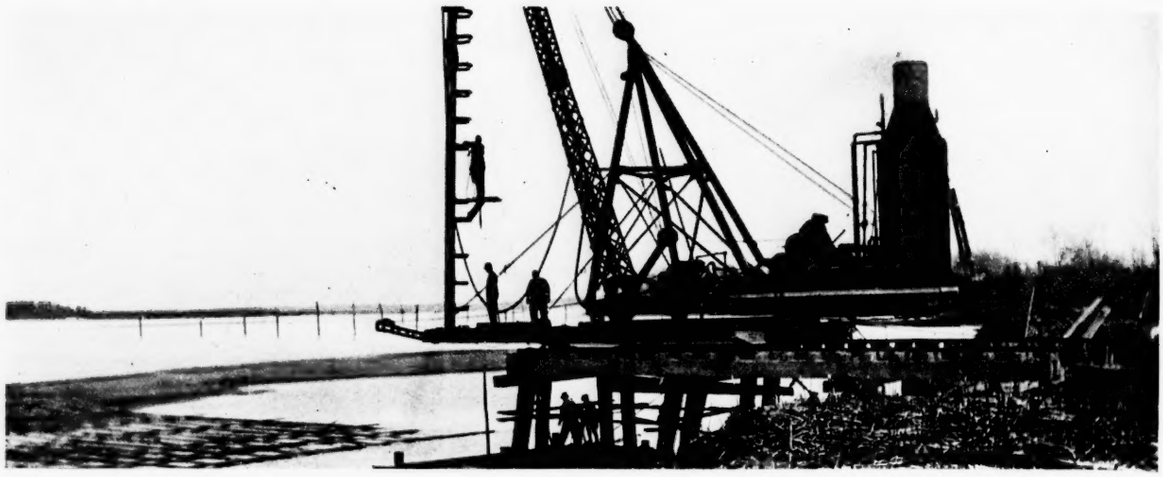
Wherever you see an important job of construction, there also you will almost always see PLYMOUTH Locomotives in service.

Send for Bulletins describing the Plymouths we recommend for general construction work.

PLYMOUTH LOCOMOTIVE WORKS **PLYMOUTH, OHIO**

PLYMOUTH

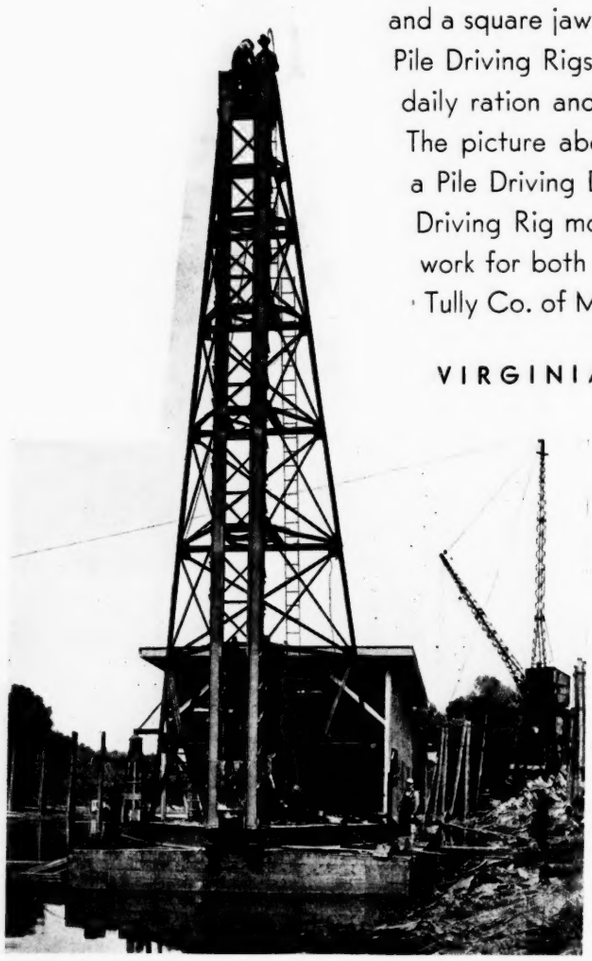
Gasoline and Diesel Locomotives



Working on "Ol' Man River"

All is not romance and glamour on the "River". There are many grim realities which must be met with a firm hand and a square jaw.

Pile Driving Rigs and Derricks go down to hard-pan as a daily ration and steel again argues its case successfully. The picture above shows a Mississippi River scene and a Pile Driving Derrick, Revolving Type. Below is a Pile Driving Rig mounted on a barge. We built the steelwork for both at our Memphis Plant for the Anderson-Tully Co. of Memphis.



VIRGINIA BRIDGE & IRON CO.

Roanoke, Birmingham, Memphis, Atlanta, New Orleans, New York, Los Angeles, Charlotte, Dallas, El Paso.

Steel Structures of all Kinds and Sizes

VIRGINIA BRIDGE

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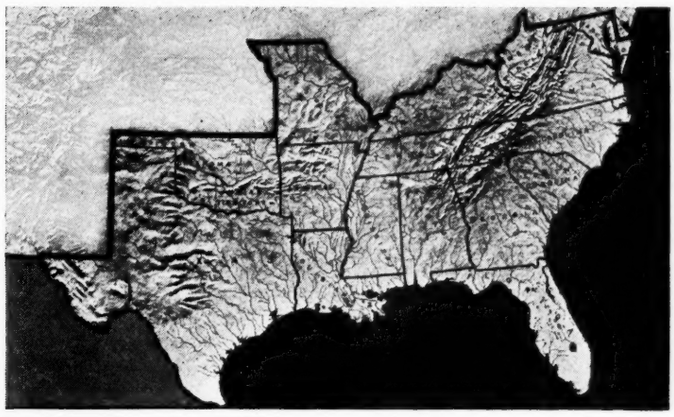

The South has 31.8 Per Cent of the Land Area and 33.6 Per Cent of the Population of the United States

MANUFACTURERS RECORD

Devoted to the Upbuilding of the Nation Through the Development of the South and Southwest as the Nation's Greatest Material Asset

Published Monthly

by the

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PUBLISHERS DAILY CONSTRUCTION BULLETIN AND BLUE BOOK OF SOUTHERN PROGRESS

Member, A.B.C.

JUNE NINETEEN THIRTY-THREE

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10,000 to 1/4 HORSEPOWER

● Many years ago this company said, "A motor is a *machine* having *electrical* functions." And motor users agreed—for they knew that by far the greatest number of motor failures were *mechanical* failures. Failures of bearings, failures of insulation, loosening of laminations and others.

Mechanical excellence — became the goal of F-M engineering. First, the pioneering of the ballbearing motor. Then, improvement after improvement which have made the F-M Motor the preferred motor wherever a thorough investigation of quality is made.

Today, this quality and longer service at less maintenance cost is available for practically every requirement from the F-M 10,000 hp. motors to the 1/4 hp. motors.

Contractors are finding their recommendation of F-M Motors and an explanation of their advanced mechanical construction a positive means of securing customer good will.

We will gladly supply bulletins describing these motors in detail. Fairbanks, Morse & Co., 900 S. Wabash Ave., Chicago, Illinois. 32 Branches at your service throughout the United States.

● ● ●

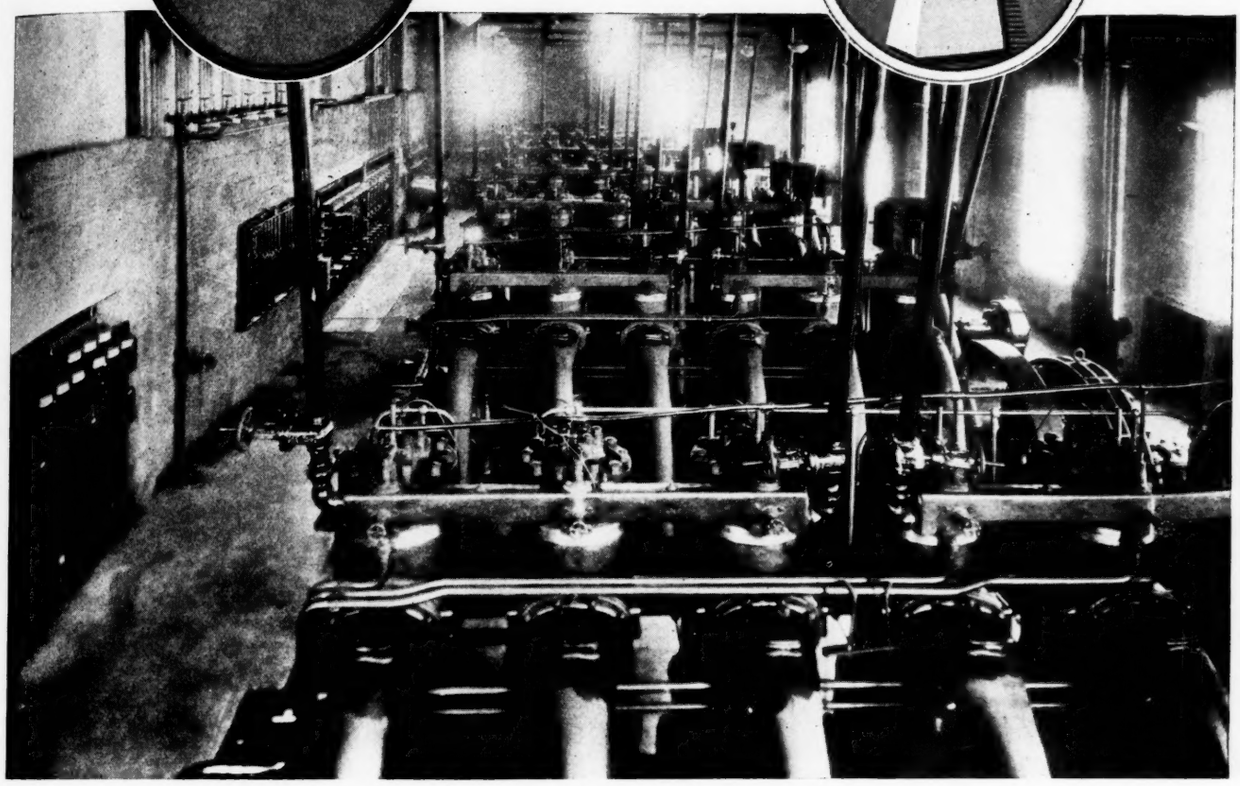
We illustrate F-M engine type synchronous motors; F-M wound rotor induction motors; F-M high speed synchronous motors; F-M vertical induction motors, weatherproof type; F-M fan cooled, enclosed type; F-M enclosed pipe ventilated motor; F-M d.c. motor and F-M single phase motors.

FAIRBANKS-MORSE
MOTORS

POWER PUMPING AND WEIGHING EQUIPMENT

5893-EA40-52

GULF *and* F M



at PRICE HILL COLLIERY

THE largest Diesel Engine powered coal mine in the world—The Price Hill Collieries Company, Price Hill, W. Va.—is lubricated throughout with GULF Products.

GULF Parvis Oil M lubricates the six 360 H. P. FAIRBANKS-MORSE & Co., Diesel Engines with maximum efficiency—minimum cost, wear and uninterrupted servce.

GULF Parvis Oils, GULF I-C OILS and GULF Harmony Oil E are establishing unexcelled Diesel Engine Lubricating Records throughout the world.

Join the GULF users and end your Diesel Engine lubricating worries!

Phone, wire or write our District Office nearest you for a Gulf Lubrication Engineer who will, without obligation to you, recommend the tested and approved oil for *your* Diesel Engine that will insure proper and efficient lubrication.

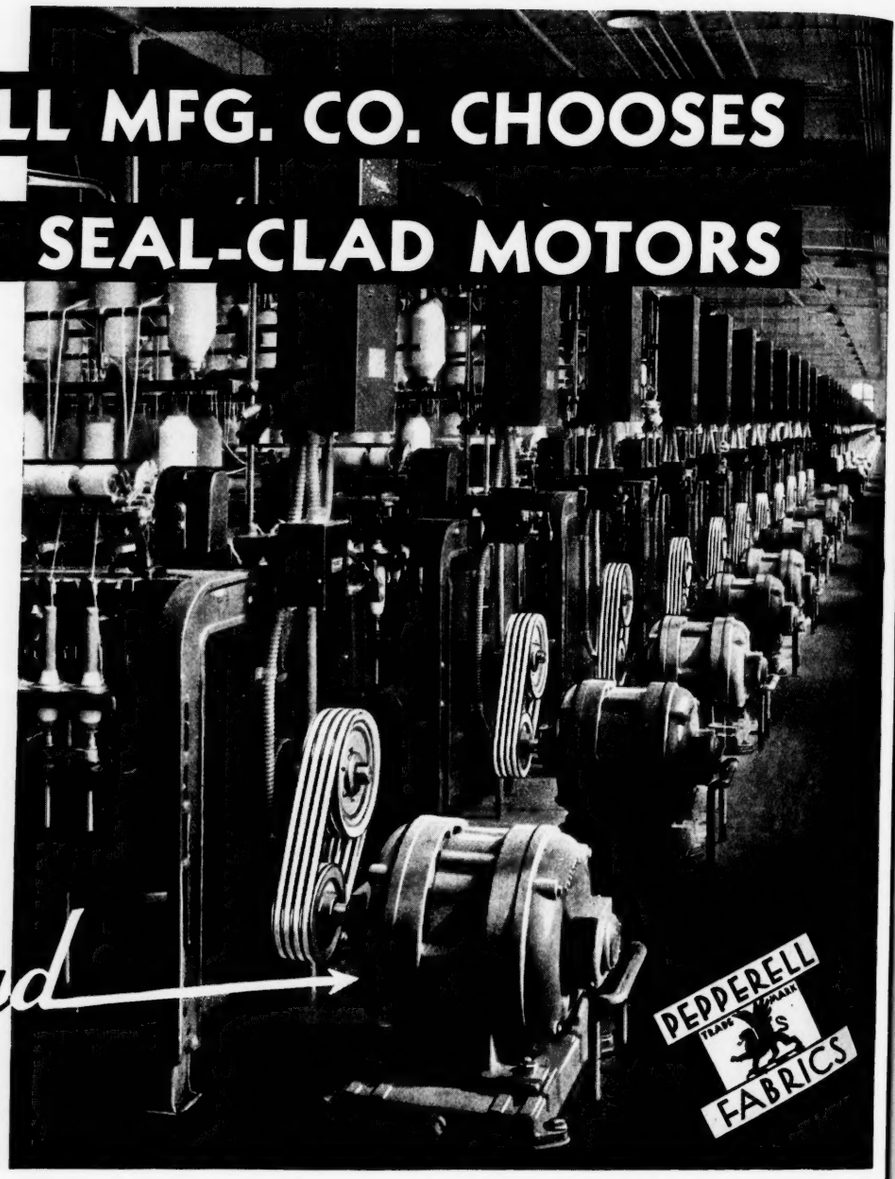
GULF REFINING COMPANY

GENERAL SALES OFFICES: Pittsburgh, Pa., U. S. A.

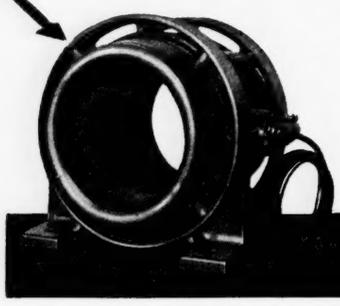
DISTRICT SALES OFFICES: Boston, New York, Philadelphia, Atlanta, New Orleans, Houston, Pittsburgh, Louisville, Toledo

REFINERIES: New York, N. Y.; Philadelphia, Pa.; Pittsburgh, Pa.; Toledo, Ohio; Cincinnati, Ohio; Port Arthur, Texas; Fort Worth, Texas; Sweetwater, Texas

PEPPERELL MFG. CO. CHOOSES SEAL-CLAD MOTORS



Seal-Clad



THESE Allis-Chalmers textile motors in the plant of the Pepperell Mfg. Co., Lindale, Georgia, are of the new Seal-Clad type. They require no screens or other devices for excluding lint or dust. Unobstructed air passages and smooth surfaces of all parts in the air paths permit free travel of lint or dust with the ventilating air.

This new design provides for cartridge type ball bearings or waste packed sleeve bearings, long leads for flexible conduit, and straight or tapered shaft extension.

SEND FOR DESCRIPTIVE LEAFLET 2155

Allis-Chalmers Manufacturing Company, Milwaukee, Wis.

TEXTILE MILL PRODUCTS

- Motors for all Mill Applications
- Texrope V-belt Drives
- Rotary Compressors
- Centrifugal Pumps
- Underwriters' Fire Pumps
- Steam Turbines - Generators
- Steam Engines - Condensers
- Hydro-Electric Units
- Transformers - All types

ALLIS-CHALMERS
TEXTILE MOTORS

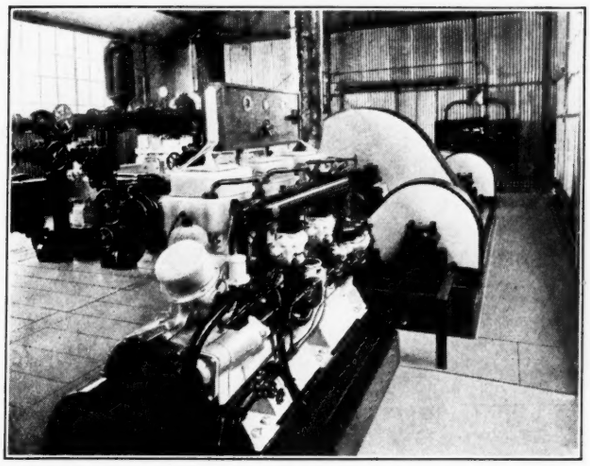
STERLING HAS ESTABLISHED

the gasoline engine standby as an assurance of continuity of power. Over 1000 cities guard their precious power and water supply with

Sterling High Duty

Internal Combustion Engines

12 to 565 B. H. P.
Gas or Gasoline



Los Angeles, Calif., a fire fighting set at an oil refinery with a GRC-6 cylinder 180 H. P. Sterling engine as a standby, direct connected at 1200 R. P. M. American LaFrance Foamite unit.

Naturally this great preponderance of installations has led to certain developments of major importance for the service. You should have the booklet "What is the Difference" when deciding.

STERLING ENGINE COMPANY

Home office and plant
1270 Niagara Street
Buffalo, N. Y.

Dept. C-7

Branch office
900 Chrysler Bldg.
New York, N. Y.

Charleston Dry Dock & Machine Company

CHARLESTON, S. C.

BUILDERS OF

All Welded Ships

Marine and Stationary Boilers

Repairs to Steel and Wooden Vessels

1,500 and 600-ton
Marine Railways

CONTRACT Machine Work

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GENERAL MACHINE WORKS
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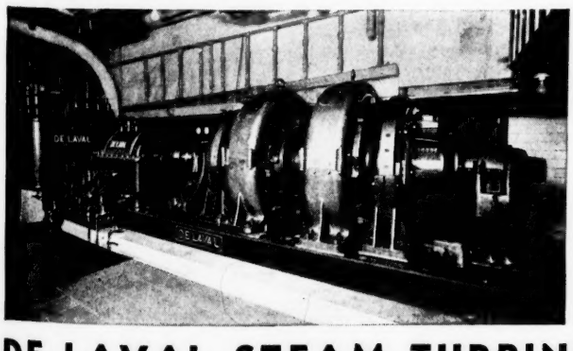
YOUR OLD STEAM PLANT IS WASTING MONEY



IN weighing this question you should take into account recent developments, such as higher steam pressures and temperatures, improved boilers and more efficient extraction and condensing turbines.

The 1000 KW. De Laval extraction turbine shown in the photograph, in connection with higher pressure boilers, stokers and cooling towers installed on the roof of an office building, reduced the daily coal consumption, as compared with the Corliss engine plant which it replaced, from 28,150 lb. to 17,369 lb., in spite of an increase of 25 per cent in power load and 15 per cent in process steam load.

The change also makes room for a further increase in capacity in a previously crowded basement.

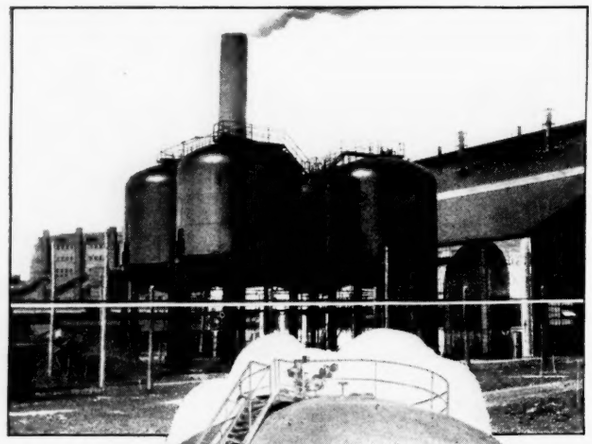
All particulars in Leaflet O-1932.

No. 3147

DE LAVAL STEAM TURBINE COMPANY, TRENTON, N. J.

We build STEEL TANKS

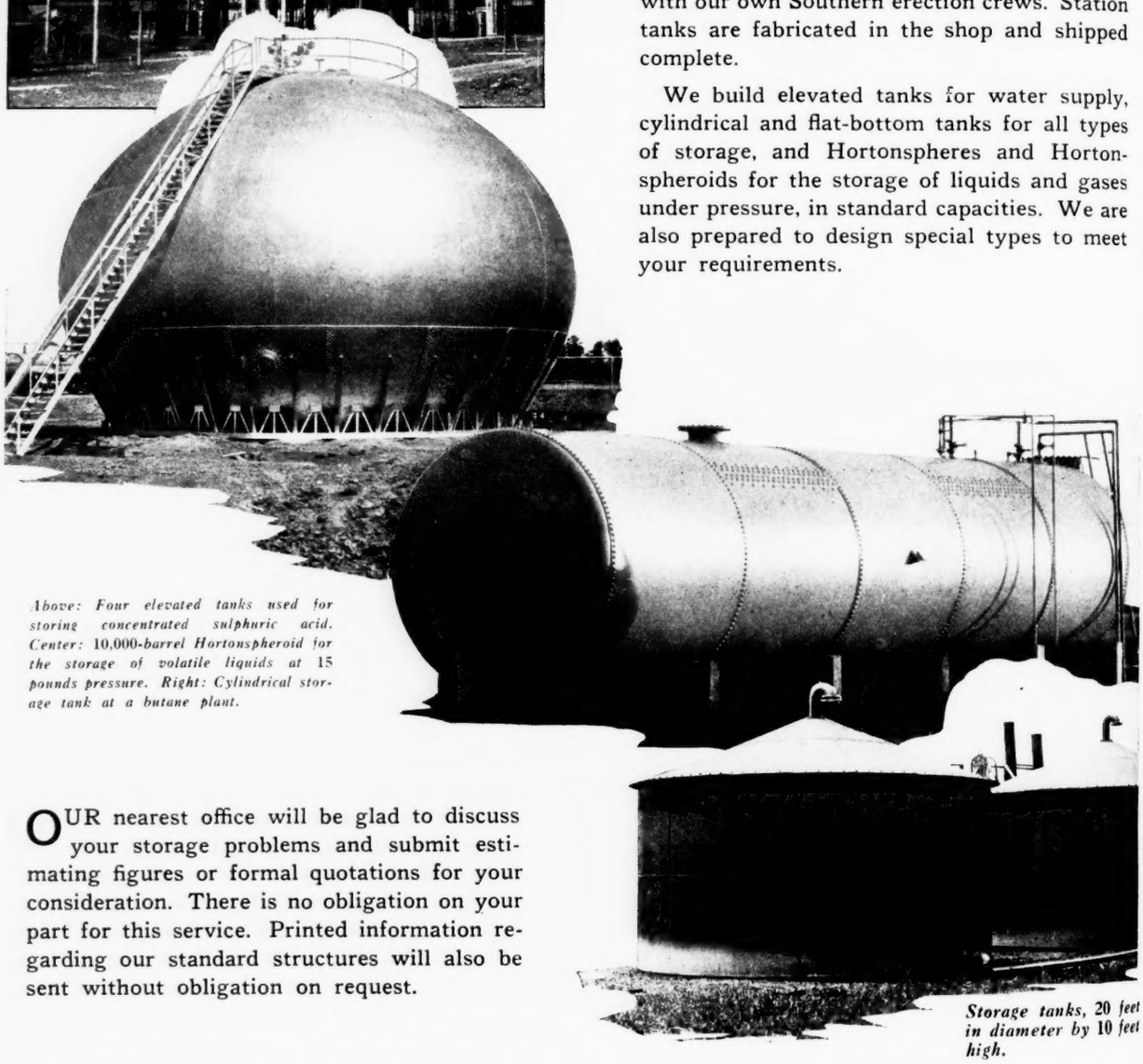
for any storage need



Whether you need a lot of storage or a little —for ordinary purposes, to withstand pressure, or other special requirements—we have facilities to supply your needs.

Installations for Southern locations are fabricated in our Birmingham plant and erected with our own Southern erection crews. Station tanks are fabricated in the shop and shipped complete.

We build elevated tanks for water supply, cylindrical and flat-bottom tanks for all types of storage, and Hortonspheres and Hortonspheroids for the storage of liquids and gases under pressure, in standard capacities. We are also prepared to design special types to meet your requirements.



Above: Four elevated tanks used for storing concentrated sulphuric acid. Center: 10,000-barrel Hortonspheroid for the storage of volatile liquids at 15 pounds pressure. Right: Cylindrical storage tank at a butane plant.

OUR nearest office will be glad to discuss your storage problems and submit estimating figures or formal quotations for your consideration. There is no obligation on your part for this service. Printed information regarding our standard structures will also be sent without obligation on request.

Storage tanks, 20 feet in diameter by 10 feet high.

CHICAGO BRIDGE & IRON WORKS

Birmingham	1530 Fiftieth St. North	New York	3113 Hudson Terminal Bldg.	Philadelphia	1619-1700 Walnut St.
Dallas	1208 Burt Bldg.	Cleveland	2216 Midland Bldg.	Detroit	1510 Lafayette Bldg.
Houston	2919 Main Street	Chicago	2106 Old Colony Bldg.	Boston	1510 Consolidated Gas Bldg.
Tulsa	1411 Philcade Bldg.	San Francisco	1040 Rialto Bldg.	Havana	Edificio Abreu 402

Plants in BIRMINGHAM, CHICAGO and GREENVILLE, PA.

B-347

• Manufacturers Record •

INDUSTRIAL CONTROL

THE control feature of the National Industrial Recovery Program, upon which the government has embarked, is closer self-regulation under a supervision "partnership" between the Federal Government, private business and labor. The "partnership," however, does not involve sharing in the profits or losses of industry, but sharing in the formation of a policy of conduct and codes of fair competition.

Citing that a national emergency exists with industry disorganized and standards of living of the American people being undermined, Senate Bill 1712 declared it

> "to be the policy of Congress to remove obstructions to the free flow of interstate commerce which tend to diminish the amount thereof; and to promote the organization of industry for the purpose of cooperative action among trade groups, to induce and maintain united action of labor and management under adequate governmental sanctions and supervision, to eliminate unfair competitive practices, to reduce and relieve unemployment, to improve standards of labor, and otherwise to rehabilitate industry and to conserve natural resources."

A more comprehensive declaration of policy in less than 80 words is hard to imagine. If carried out literally there will be an end to individual freedom in management. General provisions of the Act have been outlined in three steps: First, the initiative from within the industry, to suggest correction of its own ills, then definite corrective measures for submission to Government representatives for approval. Second, if the units of an industry do not come together willingly to overcome abuses of cut-throat competition, low wages and sweat shop conditions, the Government will step in and lay down rules of procedure for that industry, writing the code for the industry, and providing swift and drastic penalties for non-observance. Third, provision has been made for action by the Government in event the first two steps have failed to achieve the desired objective. In such an event, the Government is empowered to license an entire industry and demand that any unit desiring to operate in that industry must be licensed. At that time, the Government may set up such conditions for licensing as it deems advisable and, if these conditions are not complied with, provisions are made for jail sentences and fines for each violation.

Admitted an experiment, as old methods have not worked in the depression, the new legislation, limited to two years or to be terminated at the discretion of the President, is intended to remove some of the restrictions of the anti-trust laws and enable trade or industrial associations or groups to set up ethical rules and operation regulations for the elimination of unfair practices and destructive below cost competition. Undoubtedly this is the most constructive feature of the Act. The minority, who may seek to go their own way regardless of the consequences to the whole industrial group of which they are a member, will be forced to adhere to the regulations adopted by the majority, sanctioned and enforced by the Government.

In introducing the bill to encourage National Industry Recovery, President Roosevelt said:

> "My first request is that the Congress provide for the machinery necessary for a great cooperative movement throughout all industry, in order to obtain wide employment, to shorten the work week, to pay a decent wage for the shorter work week, to prevent unfair competition and disastrous overproduction."

While the President was urging self-regulation of industry, with the underlying motive to stop destructive competition, stabilize business and raise prices to the point where industry can again operate at a profit, the Secretary of the Interior was protesting against a group of cement manufacturers because they submitted identical bids to supply cement for Boulder Dam at a 20 per cent increase over prevailing prices. Even at the higher price quoted it was said that none of the manufacturers can make any money out of the Boulder Dam order.

Many questions are being asked. Does the regimentation of industry involve regimentation of effort? Does the determination to avoid overproduction require that the product of the individual factory shall be not only controlled by regulation of wages and hours, but allocated as well as to territory? How will the industries in one locality, where they have longer daylight and more favorable climate which reduces plant investment, overhead, operating and

living costs, be adjusted to meet those of less favored regions? To what extent will it penalize efficiency in curbing the growth of the successfully managed and modernly equipped plant with low overhead capable of operating at a minimum of cost? What control will the Federal Government have over intrastate business and if such control is attempted will it be sustained by the courts? It is contended that unless such control is exercised, the intended policy to insure cooperation between trade groups will be upset. Price-cutting by concerns doing strictly intrastate business and unregulated by the Federal Government would greatly handicap interstate business. The answers to these questions must be carefully worked out or we shall have a system of socialism that will kill the motivating force which has made America move ahead in the past to a far greater extent than any other country.

Individual manufacturers and employers' organizations have rightly objected to the labor provisions of the Act which would virtually place industry on a Closed Shop basis with Union labor regulating employment conditions an wages.

What effect will the Act have upon the development of new units or competition between industrial groups supplying similar or substitute products. Included among these products that compete with or replace each other in various uses are: Coal, oil and gas; wood, clay products, stone, concrete, steel, aluminum alloys, copper, ornamental and structural glass with other building materials; cotton goods, wool, linen, rayon and silk; fiber containers, wood, glass and metal, and the list could be extended indefinitely. Certainly the maintainment of healthy competitive conditions between producers of various kinds of products intended for the same or similar uses will be impossible if the dreaded allocation of markets has any place in the administration of the act.

Individual initiative and effort are seemingly in the background in this mass movement that is supposed to bring about the greatest good to the greatest number. Management will have to surrender certain of its prerogatives. In the administration of what appears to be an exceedingly complex measure, we believe that, unless effort of the individual industry is fostered and encouraged along proper lines, the movement will fail of its objective.

MUSCLE SHOALS

THE plans of the Tennessee Valley Authority are taking shape. This is an experiment in Government ownership and development that transcends anything of the past. Whatever the outcome with respect to the power companies, which have been pioneers in the creation of wealth, or to the fertilizer manufacturers who will have Government competition, or from the undertaking as a whole upon our national life in the light of the glaring defects of government operation in the past, the scheme now started and referred to in greater detail in an article in this issue, will be an impetus in the industrial life of the Tennessee Valley and contiguous territory extending over several states.

Idealistic in conception, it has been announced that if found successful it will be adopted for other parts of the country.

With all that has been claimed by its advocates, the possibilities of huge extravagance and waste that has too often accompanied government operation should be clearly in mind as to cause the use of every possible safeguard against repetition.

Proper accounting methods, allowance for overhead, including depreciation charges, should be just as much a part of a public owned and operated enterprise as they are prerequisites in any sanely conducted private industry. Only under such conditions may taxpayers know whether their money is being wisely invested.

CONSTRUCTIVE RESEARCH

IN this day of urgent need for economy in the expenditure of the taxpayer's money there is danger in the sweeping reorganization proposed for Governmental Departments that some sound wood may be removed along with the dead wood. The Federal Government has rendered and can continue to render valuable service to business and the public with the cooperation of organized industry. Following is an example.

A simple invention may open a new era for the lumber industry. This is the introduction of metal connectors for timber construction through the efforts of the National Committee on Wood Utilization of the Department of Commerce. Axel H. Oxholm, director of the Wood Utilization Committee, who is responsible for developing this new economical wood construction system in the United States, points out elsewhere in this issue what this will mean to the lumber and building industry, and how by the use of metal connector rings, disks, or plates, the weakest point of any wood structure, the joint, may be strengthened from four to eight times. He reports that where this system has been in operation a considerable saving in construction cost has resulted. Radio towers up to 525 feet high have been built of wood and free spans up to 256 feet can be employed in wood structures such as warehouses, hangars, bridges, etc. The lumber yard of the future is visualized as being stocked with standard items drilled and shaped for immediate use as structural steel is now shop fabricated and distributed.

There are 16 years of intensive investigation behind this project which is declared to be the most important development in wood construction in a century.

Industry has willingly contributed its part to financing this work through a cooperative arrangement with the Department of Commerce. The taxpayer benefits from such constructive research but it is the lumber and building industries that are most directly concerned and they are also footing the greater part of the bill.

DEVELOP AMERICAN INDUSTRIES

SOME opponents of a protective tariff apparently would have the United States continue to buy foreign commodities regardless of our own ability to create and operate industries to supply our needs. Through research and industrial development America can be independent of the rest of the world and certainly we owe it to ourselves and to coming generations to provide employment and to create wealth within our own borders. Our ability to develop productive capacity in some lines heretofore dependent upon foreign sources of supply too often has been ignored, while in others we have the plant capacity and required raw matrials but have failed to protect them from cheap foreign labor imports.

In the recent past we were dependent on foreign sulphur; today we are producing more than our sulphur needs.

We are now independent of foreign nitrates through the expansion of our nitrogen industry.

We are beginning to develop potash deposits in the Southwest which will make us independent of foreign potash.

We now import most of our sugar to the detriment of the sugar cane growing Gulf States and to the sugar beet States of the West which can be made to supply practically all our sugar needs.

We are large consumers of industrial alcohol and most of the molasses, from which it is made, comes from abroad although a domestic sugar cane industry could supply it.

We are importing vast quantities of copra, vegetable oils and oil seeds when we have a vegetable oil industry ample for our requirements. The South in its cottonseed, soya beans and peanuts, and an expanding tung oil industry in Florida and the Gulf States can furnish all the vegetable oils we need.

We import most of our pineapples because we allowed Florida's pineapple industry to be sacrificed for lack of protection and its early tomato and other truck crops would have gone the way of the pineapples had not some measure of protection been given in recent years.

We are the largest consumers of binder twine in the world and import the sisal from which it is made. We use more jute than any other nation, all of which comes from abroad. It is economic waste to send money abroad for these products when our own surplus cotton crop is available for twine, bagging, sacks, and fabric containers.

Expansion of rayon manufacturing in this country, with some of the largest plants in the world in the South, is proof of our production of a successful substitute for silk fabric for apparel and home use.

We need no longer to be dependent on foreign pulp wood and paper. From Southern pines only seven years old the best newspaper can be made in the South and this section with its vast pine areas is capable of producing a perpetual pulp wood supply for the United States. It is now making most of the domestic kraft paper and boxboard.

Synthetic camphor can be made from the South's naval stores output adding to the value of its pine forest by-products.

In rubber, which is now an essential raw material, chemical research will enable us to develop a synthetic rubber or secure rubber from domestic rubber-bearing plants, as chemical research has developed a nitrogen supply.

America's aluminum industry, utilizing bauxite ore, of which the South has immense deposits, was built on research. New products and new uses are constantly being developed. From aluminum cooking utensils and corrosion resisting containers the industry now produces aluminum alloy channels and sheets for construction materials, for building railroad cars and truck bodies, and for various industrial purposes.

We get most of our asbestos abroad when we have asbestos deposits and operating mines.

We import mica when we have an established mica industry.

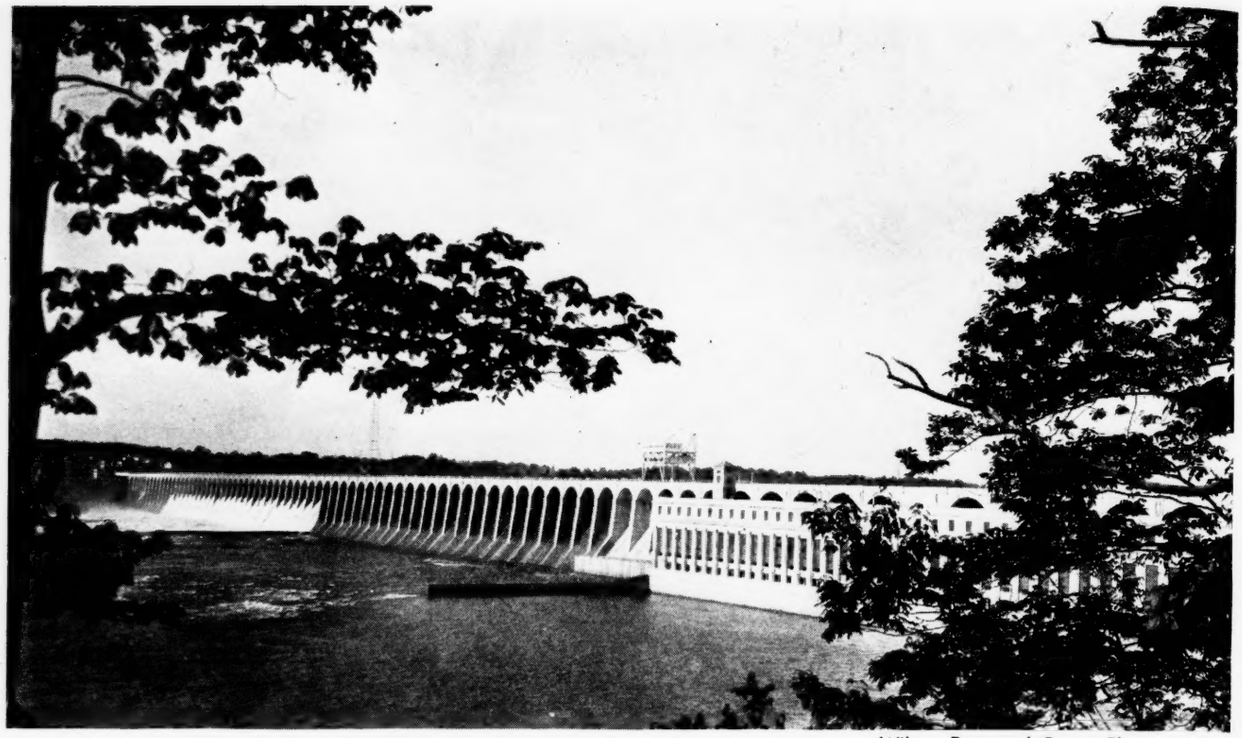
We import foreign clays, when Georgia alone has the world's greatest kaolin deposits, and the South a highly developed clay industry.

We import most of our manganese when in several places in the South and in the West are manganese deposits developed and undeveloped which are capable of supplying our needs.

We have been importing steel, lamp bulbs, rubber goods, and hundreds of other commodities that are made in abundance and of the highest quality in this country, while our workers have sought employment and our plants have been forced to curtail or close for lack of orders.

America's opportunity is to look to the strengthening of its productive capacity and internal business. We need to utilize our own resources to the fullest extent to create employment at home and activity in our factories, mines and on our farms. We cannot do this by sending money abroad for commodities that we are now producing or that can be produced here.

With increasing population and material expansion, naturally we will continue to be a large consumer of world products. This does not mean that we shall cease to expand our own productive capacity and develop American industries. The most shortsighted course is to restrict established domestic industries and allow foreign producers free entry into our markets to undersell American producers and force down the scale of living in the United States. It is equally shortsighted for one industrial group to seek cheap foreign imports at the expense of another domestic industrial group. While each unit must cooperate with its industrial group as a whole there must be cooperation among all industries that will enable them to operate on an American standard of living basis. We cannot see how it is possible for the industrial control and reconstruction program to be successfully carried out if American producers are limited as to production and operation while allowing foreign producers greater access to our markets.



Wilson Dam and Power Plant at Muscle Shoals

TENNESSEE VALLEY DEVELOPMENT

Great Water Power Resources and Abundant Raw Materials Available in the Tennessee Basin Which Has Become a Vast Laboratory for Experimentation in the Government's Regional Planning Program

WITH the signing by President Roosevelt on May 18 of the Bill for the development of the Tennessee River Basin through a corporation to be known as the Tennessee Valley Authority—"clothed with the power of Government, but possessed of the flexibility and initiative of a private enterprise"—the Tennessee Valley became the site of a new economic order.

It is envisioned as an empire where intensified and diversified agriculture will enable farmers to become self supporting through the growing of truck crops, dairying, cattle and poultry raising, because near-at-hand markets will be created with industrial workers as consumers, in small cities along the banks of the river, rather than in large congested cities.

The Tennessee Valley project is a daring experiment. Its objectives cover a broad field, contemplating the physical remaking of an entire and difficult watershed: the development of power on not one, but several rivers, the creation of dams in series and huge artificial lakes, with a view not only to the production of hydro-electric power but to the protection of property and life from floods, and the prevention of soil erosion: the stimulation of agricultural diversification; elimination from agricultural use of marginal lands: reforestation: and decentralization of industry.

The Tennessee Valley Authority is authorized to:

1.—Acquire real estate, by condemnation if necessary, and build dams, power houses, reservoirs, transmission lines and navigation projects.

2.—Tie-in power installations into one or more interconnected transmission line systems.

3.—Contract with commercial producers for fertilizers.

4.—Manufacture experimental fertilizer at Muscle Shoals.

5.—Manufacture and sell explosives to the Government at cost.

6.—Produce, sell and distribute power.

7.—Lease nitrate plant No. 2 for the private manufacture of fertilizer.

8.—Sell $50,000,000 in 3½ per cent 50-year bonds to finance the improvements.

9.—With Presidential approval, complete the installation of generating equipment at Dam No. 2 and the steam plant at nitrate plant No. 2, near Muscle Shoals.

The Bill also clothes the President with authority to make surveys and recommendations to Congress relating to the economic and social betterment of the Tennessee River Basin, including reforestation. It specifically directs the construction of Cove Creek Dam across the Clinch River in Tennessee, as well as a power transmission line from Muscle Shoals, connecting the two power plants. The Bill subordinates the original Muscle Shoals development to a much more comprehensive undertaking.

Power Possibilities

Colonel Hugh L. Cooper, consulting engineer for Wilson Dam No. 2 at Muscle Shoals, said in the MANUFACTURERS RECORD, of October 3, 1925: "Muscle Shoals is the keystone of a vast superpower system that will serve around 12,000,000 of people in six states of the South.

with benefits that can come to them in no other way. * * * If sound engineering can be carried on in a sane manner, the Tennessee River can be rebuilt with wide benefits to navigation and with a power production equal to more than one-fifth of all of the hydro-electric power that is now used in the United States, Niagara Falls included."

The Tennessee River, the fifth in size in the United States, is formed by the Holston River, rising in the Great Smoky Mountains of Virginia, and the French Broad from North Carolina, which unite near Knoxville, Tenn. It flows toward the southwest, passing down 20 miles beyond Chattanooga, Tenn., and entering Alabama in the northeastern part of the state, re-entering Tennessee in Hardin county. From there the course is nearly due north across the State of Tennessee and the western part of Kentucky, joining the Ohio River, at Paducah, Ky. With a length of more than 650 miles, the Tennessee River drops 650 feet from its source to its mouth. In some sections it flows swiftly, though smoothly; in other places it is turbulent. The channel is cut through limestone for the most part. Frequently running through canyons sometimes as deep as 200 feet, the river spreads out in places until it is two or even three miles wide. In its upper reaches its tributaries spread out like an immense fan to gather the heavy rainfall of the lower ranges of the Appalachian Mountains.

The Tennessee's affluents are the Holston, the Clinch, the French Broad, the Elk and Duck Rivers, which may be considered the main arterial currents, and with their tributaries they drain an area of more than 40,000 square miles in seven States. It is the largest river east of the Mississippi with the exception of the Ohio River, of which it is a part. The Tennessee Valley is one of the important feeders of the Mississippi Basin, which covers two-fifths of the area of the United States. The downrush of the Tennessee River's waters in the spring and fall are a major factor contributing to floods along the Mississippi River. Hence, harnessing the Tennessee will not only provide for the development, at 22 dams, of from 3,000,000 to 4,000,000 horsepower, but will lead eventually, say engineering authorities, to flood control of the Mississippi, when the Wabash, Ohio and Missouri Rivers are similarly harnessed.

From the source of the Holston to the mouth of the Tennessee is 1200 miles. It is navigable from Paducah, Ky., to Florence, Ala., a distance of 280 miles. Above Florence are the Muscle Shoals—17 to 20 miles long. Above the Shoals the river is navigable to light draft steamers part of the year. It is in the shoals section that the river has its most abrupt drop—134 feet in 34 miles, and 100 feet of that drop is in the last 17 miles above the Shoals.

Early History

Tennessee River navigation and Muscle Shoals made their appearance as a Federal problem in 1824, when Secretary of War John C. Calhoun, recommended "a survey of the river looking to improving the navigation around Muscle Shoals Rapids in aid of commerce and military operations." Andrew Jackson was one of the first presidents to see its possibilities, in a day when it was spelled "Mussel" Shoals. It so appeared on maps as late as 1876 and was so known because of the abundance at the site of mussels, clam-like shellfish. After the name had been misspelled on maps, the explanation was it had been named Muscle Shoals because of the "muscle" power required to pull a canoe through the rapids.

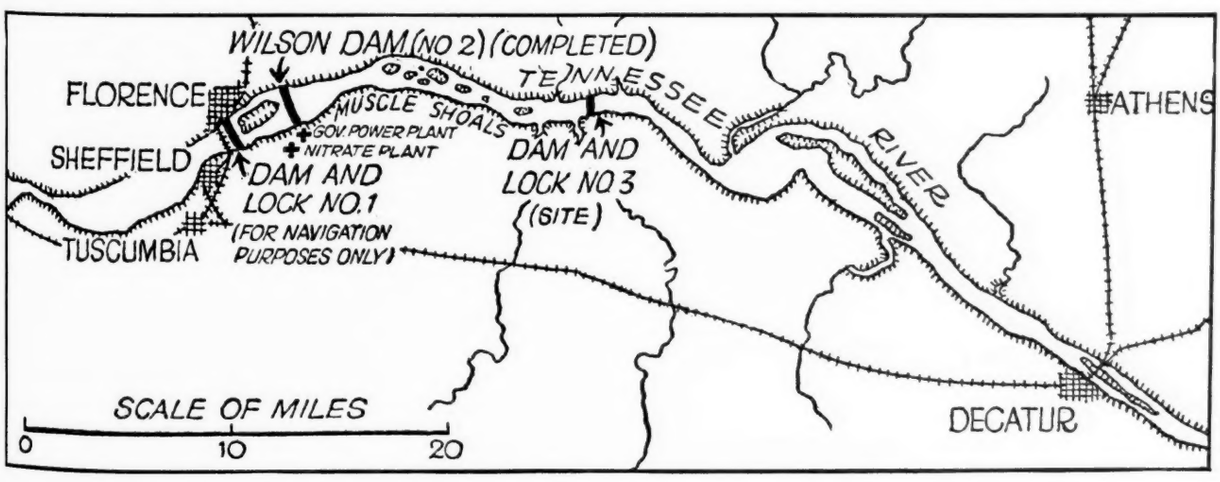
The first survey of the river was authorized by Congress in 1827, and in 1832 the State of Alabama undertook the building of a lock canal around the Shoals, funds being procured by the sale of a Federal grant of land of 400,000 acres. With the development of hydro-electric production, adaptability of the Shoals rapids for hydro-electric power was recognized. The first application by a private enterprise for a Federal permit to construct power dams there was denied in 1903. In 1913 the Muscle Shoals Hydro-Electric Company asked for a 100-year lease of two dams, which under the proposal were to be built by the Federal Government. The bid, though approved by the Board of River and Harbor Engineers, was rejected by Congress.

War Emergency Brought National Recognition

When President Wilson decreed that the American Army in France should have a munitions source independent of all other nations, engineers were directed to locate a site for the production of nitrates from the air—a process requiring a vast amount of cheap electric power, lime and coal. So Muscle Shoals was selected as the "ideal location" for a power dam and its nearness to vast deposits of limestone and coal.

Under the pressure of war, the United States started work at Muscle Shoals on the world's largest monolithic structure, with a total length of 4900 feet, of which the dam is 3098 feet, the power house, forming part of the river barrier, is 1250 feet; the lock and abutment, 150 feet, and the switch house building 400 feet. The crest of the dam is 98 feet above the bed of the river. From the top of the power house to the foundation rock is 150 feet. The normal width of the dam proper at its base is 160 feet. The dam consists of three distinct sections—the non-overflow, spillway and power-house. The spillway dam occupies the northerly three-quarters of the river bed, and the power-house the remainder of the river bed adjacent to the south bank of the river. A navigation lock is on the north bank of the river. A single leaf bascule bridge, with a span of 108 feet, carries a roadway above the navigation locks at the north end of the

Muscle Shoals Area



dam. All sections are surmounted by a concrete arch bridge, providing a roadway width of 23 feet, with two railroad tracks embedded therein, and a sidewalk. The impounded water extends up stream a distance of 14.7 miles to the site of the proposed Dam No. 3. The lake created has a surface area of 14,000 acres.

Some interesting figures regarding the power-house and generating equipment are as follows:

Total number of generating units, 18; total number of exciting units, 2; horsepower of waterwheels, (first four), each 30,000; horsepower of waterwheels, (next 14), each 36,000; total ultimate installation horsepower, 624,000; total concrete in power-house section, 498,200 cubic yards.

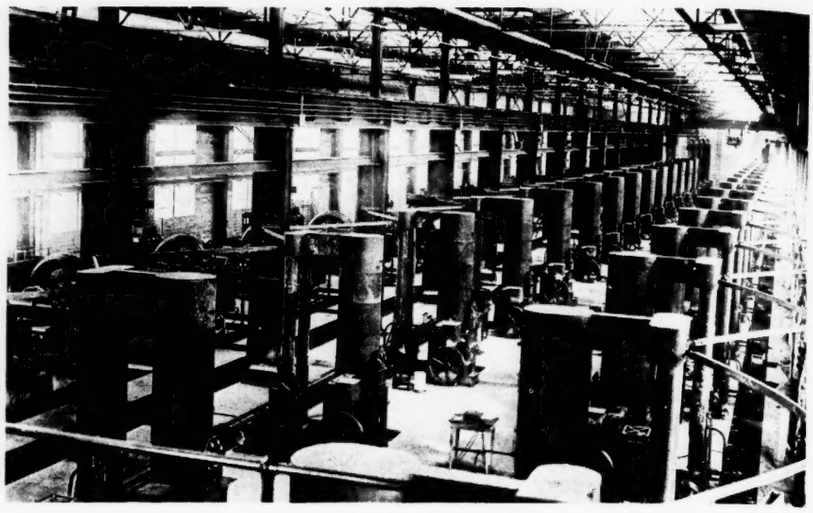
The Wilson Dam power project cost over $50,000,000, and 1,234,000 cubic yards of concrete were placed in the dam structure proper.

The Muscle Shoals project as initially planned consisted of the Wilson Dam, known as Dam No. 2—a combination power and navigation project; Dam No. 1, a purely navigation dam, three miles down stream from Wilson Dam, and Dam No. 3, now known as the General Wheeler Dam, about 14 miles up stream, which will cost approximately $20,000,000 and develop about 250,000 horsepower, bringing the total power available from the two power dams to about 850,000 horsepower. The Wheeler Dam involves a lock 360 feet long and 60 feet wide, providing a lift of about 37 feet. Contract for the lock of this power dam was let early in 1933, involving an estimated cost of $750,000.

Nitrate Plants

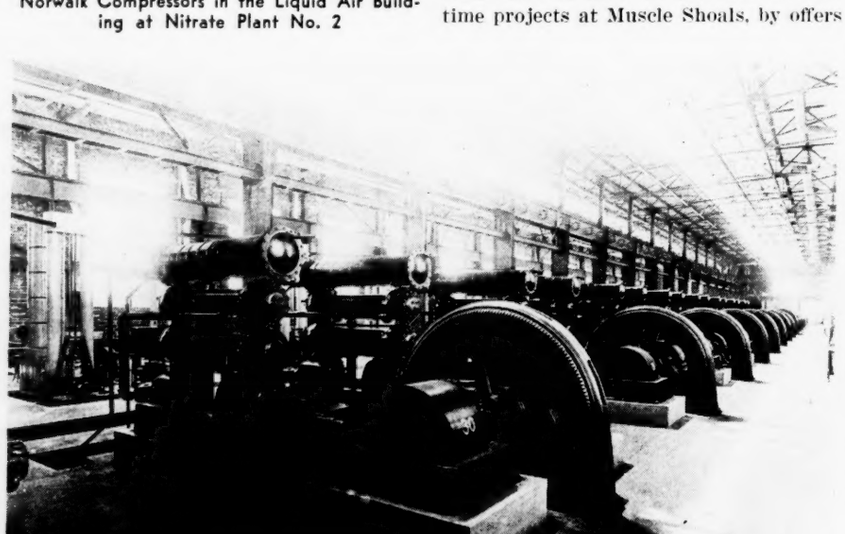
On the south bank of the river the Government built what have been described as two of the largest plants for the production of explosives' raw materials in the world. One, situated on a tract of 1900 acres, was designed to produce nitrates from the air, using the "Haber" process; the other, on a tract of 2200 acres, was to develop nitrates by a process known as "cyanamid fixation." When it was seen that the hydro power plant would take years to complete, the Government went forward with construction of a 120,000-horsepower steam-electric generating plant, since enlarged, to furnish power for the nitrate plants. The war-time cost of this power plant was $12,000,000. The air nitrate plant, No. 1, which cost about $13,000,000 never got into operation. The cyanamid plant, No. 2, which cost about $69,000,000 got into operation about a week before the signing of the Armistice. About 35 per cent of Wilson Dam had been completed when the Armistice was signed. The dam and power plant were completed in 1925, and the initial group of generating units installed.

Since the completion of Wilson Dam the country's attention has been focused from time to time on the related war-time projects at Muscle Shoals, by offers to purchase the properties submitted by groups of power companies, manufacturers of chemicals and fertilizers, and in particular by Henry Ford.



Ammonia Columns in the Liquid Air Building at Nitrate Plant No. 2

Norwalk Compressors in the Liquid Air Building at Nitrate Plant No. 2



Due to the wide variation in the flow of the Tennessee in its present uncontrolled state, although the total installation at Wilson Dam is 612,000 horsepower, the primary or continuous 24-hour-a-day year-round available production is but 100,000 horsepower, whereas, with the harnessing of the river as now projected with related power generating plant and storage reservoirs, the primary horsepower at Wilson Dam, say experts, will be increase to 250,000 horsepower. What is more the entire installation will be made available for power production purposes about 75 per cent of the time.

Cove Creek Power Dam Becomes Keystone In Valley Development Program

The master key to unlock the possibilities of the Tennessee Basin is the Cove Creek Dam, estimated to cost $35,000,000. The dam, which engineers say will be one of the world's largest, will be located on the Clinch River. The site is about 25 miles north of Knoxville and about the same distance from the Kentucky border. The dam will be 225 feet high, more than twice the height of Wilson Dam at Muscle Shoals, 250 miles southeastward. The projects claiming immediate attention are the Cove Creek Dam and Dam No. 3 at Muscle Shoals.

Cove Creek Dam will have a total installed generating capacity of about 200,000 horsepower. But its importance lies chiefly in the storage capacity of the reservoir covering 53,000 acres, to be created, its waters filling the valleys of the Clinch River, and its tributary the Powell River. Portions of five counties will be inundated, forming a lake 12 miles wide at points and 41 miles long,

a veritable inland sea, with a total capacity of 86,000,000,000 cubic feet.

Hundreds of men are in the field carrying forward surveys to determine the water line, routes for railroads to serve the territory, rights-of-way for essential highways and bridges, etc. The task is a gigantic one. The relocation of rail lines, highways and bridges will involve an expenditure of over $5,000,000. At least 10,000 separate land holdings will have to be acquired. A standard gauge railroad line involving the construction of a bridge across the Clinch River, will be built from the dam site to tie in with the Southern Railway line at Offut, a distance of 7.9 miles. Detailed plans for the dam, power-house and spillway and specifications for the generating and transforming equipment are being rushed to completion by a corps of civilian technicians and Army engineers. A preliminary estimate covering the cost of constructing a transmission line from Cove Creek to Dam No. 2, places the cost at $5,000,000 to $8,000,000.

The design for Dam No. 3 at Muscle Shoals is about complete, and it is believed that it will be possible to advertise for construction bids within 30 to 45 days.

Power Resources of Tennessee River Basin

The total water power resources of the Tennessee Basin are about 3,000,000 horsepower available 50 per cent of the time, or about 2,500,000 horsepower available 90 per cent of the time, according to the U. S. Geological Survey, Department of the Interior. On the basis of the present practice in the installation of waterwheels at developed waterpower plants, about 5,000,000 horsepower of waterwheels would be required in the utilization of all the waterpower resources of the Tennessee River Basin.

The total capacity of 46 water-power plants in the basin (only one of which is a Government project) at present is 876,000 horsepower, which represents less than 20 per cent of the estimated total water-power resources of the basin.

Accurate data is available for the entire river system back to 1903; thus, all computations are based on a 25-year period. Moreover, with a view to obtaining information on location and capacity of reservoirs, sites of power and navigation dams, and for the study of navigation and its relation to the industrial development of the section, aerial photography was used to map 50,000 square miles of territory. With this data in hand it is possible to plan for the highest possible operating efficiency of power projects. Under the proposed plan practically no water will be wasted; each drop must perform work at many plants. Under such regulations, navigation would be possible throughout the year. When all the proposed 131 plants along the river and its tributaries are completed, it requires no great stretch of the imagination to conceive of a "controller" operating from a central point, in touch with each power plant, collecting reports of rainfall, reservoir height and other routine data. Skilled in appraising conditions, he would order one plant to speed up, another to reduce its ouput, and still another to close entirely, so that the output might be maintained at the prime rate for the system and conserve water.

Abundant Raw Materials For Diversified Industrial Development

The advantages of the Tennessee Valley for the location of new industries have long been recognized. In variety and reserve of minerals, few sections of the country can equal the basin's inventory. Asphalt rock, barites, bauxite, clay, coal, iron ore, manganese, marble, phosphate rock, slate and zinc ore, and an inexhaustible supply of limestone, sand and gravel are found. The wealth of natural resources, together with an equable climate, a plentiful supply of water for domestic and industrial purposes, excellent transportation and an abundance of power, are factors that have already resulted in the establishment in the section of plants owned by America's foremost industrial concerns.

The productiveness of the soil in the agricultural section of the Tennessee Valley is well known. The National Land-Use Planning Committee believes that the Tennessee River Basin program "affords an unusual opportunity for land use planning, including the diversion of submarginal agricultural lands to other uses, reforestation and control of soil erosion and floods. Industrial decentralization would bring improvement in farmers' income through the development of local markets and the creation of opportunities for employment and industry." The development of small industrial centers will permit members of farm families to live on the farm and also work in industry; thus, providing an elastic and dependable labor supply of high quality, with shelter and subsistence in times of industrial depression, thereby reducing the problems of urban unemployment relief.

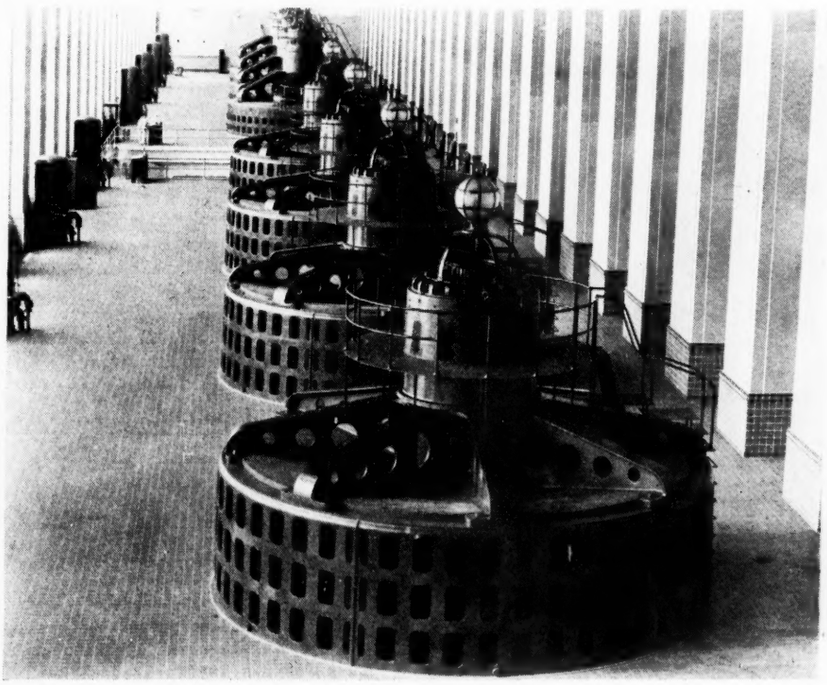
Regional Planning

Reforestation is envisioned as an aid to navigation, flood control and power development through regulation of stream flow. The Land-Use Committee sees in planned forest development and management the creation of a permanent source of raw materials for woodworking industries.

As one of the first steps for this regional planning, a careful inventory and classification of the land resources, their ownership and present use, will shortly be initiated, so that on the basis of such information, areas would be designated for public acquisition either by the Federal Government or by the individual states.

No development of such magnitude ever before has been proposed. The Tennessee Basin has become a vast laboratory for experimentation.

Interior Power House at Wilson Dam Showing Initial Installation of Electric Generating Units



FABRICATED STRUCTURAL TIMBER

Modern Connectors for Wood Joints, the Most Important Development in Wood Construction in a Century, Presages Radical Changes in Lumber Production, Handling and Use

By

Axel H. Oxholm,

Director,
National Committee
on Wood Utilization

VISUALIZE, if you can, the future building material yards of the South, stocked with standard fabricated lumber items, drilled and fashioned to exact shapes, ready for immediate erection. Not piled out in the open and exposed to the weather, but carefully stored in bins, under roof and protected from the elements. All pieces marked to indicate their grade, the moisture content, the species, the load-bearing capacity, and most important of all the shop mark of the lumber producer, proud to make the world know that he turned out this material and that he guarantees the quality.

This is no dream. In Europe large wood-engineering concerns have for some years built up a flourishing business on this basis.

A small metal gadget known as a "connector" is responsible for this radical change in lumber production and lumber use that launches a new economical wood construction system. Through the use of the connector rings, disks, or plates, the weakest part of any wood structure, the joints may be strengthened four to eight times.

* * *

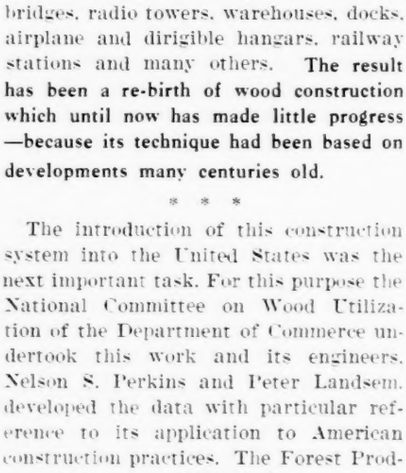
It was during the war that this new idea in wood construction was born. Germany, a large producer of iron and steel, required most of the output for military purposes, but their forests, the engineers believed, could be drawn upon for structural materials. The German forests do not produce structural wood of superior qualities. They had fir and spruce well adapted to interior finish, boxes and crates but not comparable for building purposes to Southern pine. German engineers knew that the wood joint is the weakest part of any structure so they set about to reinforce this weakest link. The single bolted joint commonly used in wood construction was supplemented with an iron ring inserted into the two wooden members to be joined. This metal ring imbedded into both wooden members replaced the bolt as a load-carrying unit. The bolt inserted through the center of the ring merely acted to bind the two pieces together. A strengthening of the bolted joint, amounting to several hundred per cent, resulted.

I learned of this development from German war prisoners in France in 1918 and during the subsequent years I gathered information in regard to all other types of joints developed in Norway, Sweden, Czechoslovakia, Germany, Switzerland, Austria, and elsewhere. During the past ten years these joints have resulted in the erection of mammoth structures in Europe, notably in the field of bridges, radio towers, warehouses, docks, airplane and dirigible hangars, railway stations and many others. **The result has been a re-birth of wood construction which until now has made little progress—because its technique had been based on developments many centuries old.**

* * *

The introduction of this construction system into the United States was the next important task. For this purpose the National Committee on Wood Utilization of the Department of Commerce undertook this work and its engineers, Nelson S. Perkins and Peter Landsem, developed the data with particular reference to its application to American construction practices. The Forest Products Laboratory, United States Forest Service, undertook to make thousands of tests of the more important types of connectors used with American woods.

Cross Section of Joint Showing Application of Small Type Connector Ring



This work was carried on by George W. Trayer, senior engineer, of the Laboratory. In order to make the information of as great practical benefit as possible a sponsoring committee of 14 engineers, architects, and builders, representing their respective societies and associations with a total membership of over 100,000 was appointed. This committee worked with the mentioned engineers in the preparation of the report which has now been released, under the title "Modern Connectors for Timber Construction." This is the only complete treatise on modern connectors and their application in existence. The German Society of Engineers, recognizing the importance of this work, has already taken steps to translate the report into German, thereby aiding the Committee in its work to secure universal recognition of this important step in wood construction.

* * *

"The most important development in wood construction in a century," is the manner in which Dr. Wilson Compton, Secretary-Manager, National Lumber Manufacturers Association, expresses the opinion of the organized lumber industry, concerning the modern connector system.

The particular advantage of the connector system lies in the economy of construction costs. The lumber is shipped in pre-fabricated form from the sawmill, much in the same manner as structural steel. On the building job the workmen assemble the structural parts, insert the connectors and the bolts, and the erection is a simple matter, under proper supervision. Since these connectors strengthen the joints from four to

eight times it also follows that the size of the principal building members may be decreased.

In addition to representing an appreciable economy in lumber and hardware such structures are more pleasing in appearance than buildings erected under the old system. This has a strong appeal to architects and for this reason the profession has taken a keen interest in the system. N. Max Dunning, Fellow, The American Institute of Architects, says: "Modern connectors for timber construction broaden the opportunity for architectural consideration for wood, since slenderness of design is characteristic of this system."

* * *

Already industry has taken steps to have these connectors manufactured and distributed in America and hundreds of engineers are engaged in the designing of bridges, radio towers, roof trusses, and many other types of structures.

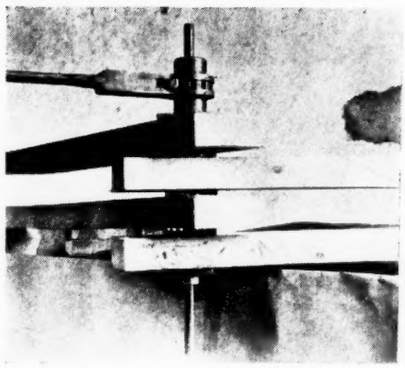
In the radio field for instance, this type of construction is of the utmost importance. The German Government, exercising a monopoly on radio broadcasting and operation, has for many years been building wooden radio towers and is now completing a tower 525 feet high. For these towers the German Government has made extensive use of our yellow pine from the South because this species has proved to be more suitable for these purposes than European woods. This is a remarkable tribute to Southern pine that Germany, even under present economic conditions is using this species. Many of America's foremost radio engineers are now giving serious consideration to the construction of wooden radio towers.

In the highway construction field this modern connector system has a wide application. There are thousands of bridges required throughout the South and this type of construction will be of particular use for secondary and tertiary roads.

These connectors will also play an important part in dam construction, river and harbor work, port development, and flood control.

Bus lines are rapidly being extended in every direction and this means the construction of termini and bus stations.

Through the use of modern connectors free spans of wood-framed arches up to 256 feet have been constructed in Europe. This type of construction will therefore undoubtedly find a wide field of usefulness for these purposes, and also for garages, warehouses, auditoriums, and airport developments. Notably, of European construction practice, is the use of wood trusses in many of the most modern railway station buildings. The best known example is the new railway station in Suttgart, Germany, where the



Pressing "Alligator" Toothed Ring Connectors Into Wood, Forming Rigid Joint

engineers have found that wood trusses stand up well.

There has been a remarkable growth of small industries throughout the South and this growth is still being maintained. The modern connector system undoubtedly can be used to good advantage particularly in cases where the factory owner desires to erect structures of wood. In paper mills and chemical plants wood construction offers particular advantages.

Fire look-out towers, much in demand at this time in connection with reforestation projects, may be built with local labor, and barracks and other housing facilities to be provided for the men may also be erected under this system.

* * *

The South produces a variety of valuable timbers for construction purposes. In addition to Southern pine, cypress is is one species which will greatly benefit from this new development. As is well known cypress possesses natural properties rendering it highly resistant to decay and insect attack and it is, therefore, not necessary to chemically treat cypress to secure long service.

Other species not possessing these properties may be chemically treated to enhance their value as durable structural materials. This will create more business for the many wood preserving plants in the South.

To the lumber exporters this new connector system is of particular interest since in many foreign countries where our Southern lumber is used there is considerable difficulty in securing skilled carpenter labor. The erection of buildings under the connector system has many advantages and the lumber exporter should therefore keep a close tab on developments in this field with a view to interesting his foreign connections in securing the widest possible application for this construction system.

* * *

The modern connector system will put real engineering into wood construction. This will mean greater satisfaction and service from wood. This question strikes right at the heart of commercial reforestation since the future of our forests depends on the demand for forest products. If it is profitable to grow timber it will be grown. It, therefore, seems particularly appropriate at this time when the public's interest in reforestation has been aroused that this new construction system should be launched. It gives a new ray of hope to the timber owners and lumber mills of the South and offers many advantages to the consumers. In short, it is WOOD UTILIZATION AT ITS BEST.

Modern Connectors Are Used in Constructing These Three-Hinged Wood Trussed Arches Which Have a Span of 85 Feet

TRUCK TRANSPORTATION

By

J. Haden Alldredge*

An Impartial Appraisal of the Economic Effect of the Motor Truck as a Carrier for Hire

IN its recent report, the National Transportation Committee, organized at the request of certain business associations, savings banks, insurance companies and other investors in railroad securities, recommended that motor-vehicle transportation be put under such regulation as is necessary for public protection. Almost simultaneously, the Joint Committee of Railroads and Highway Users, appointed by the Association of Railway Executives and the National Highway Users Conference, made similar recommendations. Many of the States already subject this form of transportation to some kind of regulation. The Federal Government has not yet done so, but Congress has the matter under consideration.

Motor-vehicle transportation is both public and private. From a regulatory standpoint, other than the exertion of the ordinary police powers of government in the interest of safety on the highways, it is the public phase of such transportation—that is, the transportation of persons and property for hire—that is of real concern. Passenger transportation by motor bus does not present the serious and complicated regulatory problem as that presented by the motor truck in the transportation of property.

*Mr. Alldredge is chief of the Transportation Bureau of the Alabama Public Service Commission, Montgomery, author of Alldredge on Rate-Making for Common Carriers, and co-author fourth edition of Watkins on Shippers and Carriers.

Motor-truck transportation for hire, as heretofore carried on, has not been altogether good from an economic standpoint. It has exhibited a destructive as well as a constructive side. It will be the purpose of this discussion, therefore, to contribute something toward an impartial appraisal of this situation by reviewing both the good points and the bad ones, from an economic standpoint, of motor-truck transportation for hire on the highways of the country.

Constructive Functions

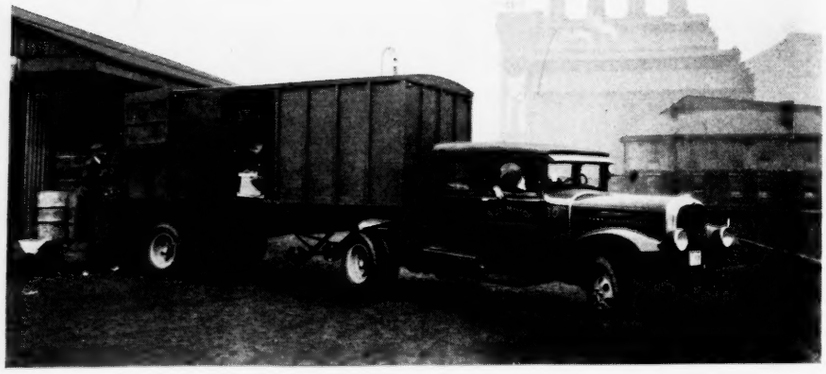
The motor truck has undoubtedly increased the speed of transportation service, particularly as regards less-than-carload shipments. That has been one of its strongest appeals to the public. Greater speed in moving freight has facilitated quicker turnovers, enabled retail and wholesale merchants to buy in smaller quantities, and at the same time to carry fresher stocks of merchandise. Not only has this meant greater convenience in the distribution of merchandise, but it has brought about a considerable saving in the total cost of getting merchandise from its sources of production to the points of final consumption.

Another valuable contribution of the motor truck has been the elimination of separate transportation agencies at origin and destination and the furnishing of a complete transportation service, by a single agency, in the moving of freight from the shipper's door to the consignee's door. In this country, railroad transportation (except in cases where both shipper and consignee had private sidetracks, or were adjacent to railroad freight stations) before the advent of the truck had been confined to station-to-station service. This necessarily compelled the employment at origin and destination of separate agencies to complete the task of moving freight from the door of the shipper to the door of the consignee. Transportation service is never complete until this is done. The interjection of other agencies to perform this service was both inconvenient and expensive. Either the shipper or the consignee had to bear the expense, at least in the first instance. Very frequently this expense, to say nothing of the inconvenience involved, amounted to as much as the total freight charged by the railroad for its station-to-station service. When the motor truck undertook to perform all the transportation service required to move freight from the shipper's warehouse to the consignee's warehouse, it met with ready response, because it was more convenient and cheaper than the traditional service of the railroad.

Railroad transportation, as heretofore conducted, has necessitated the adoption

Fleet of General Motors Trucks
Owned by the Jack Rabbit Motor Express Co., Charlotte, N. C.

General Motors Truck and Trailer of Boe Motor Transportation Company, Baltimore



One of Fleet of 12 Dodge Trucks Operated by the Carolina Lines at New Bern, N. C.

New 3-ton Dodge truck with trailer carrying 24 hogsheads of tobacco weighing 13½ tons. Trucks are governed to 28 miles an hour and make two round trips of 90 miles each day

Heavy Duty Dodge Tractor and Van Trailer

The special body was made by the Charlotte Wagon and Auto Co.

and maintenance of rather rigid packing requirements for freight shipments. Of course, these requirements are not uniformly rigid for all classes of freight, but they cover a rather wide range of commodities. These requirements have been necessary in order to avoid losses from breakage and other causes arising out of the ordinary course of transportation. It costs money to pack freight; in fact, it is not an uncommon thing for the cost of packing to amount to more than the freight charged by the railroad. A notable instance of this kind is the cost of packing furniture and household goods.

While there may be room for differences of opinion as to the equity involved, it is nevertheless true that the motor truck has lowered transportation charges—that is, the direct, station-to-station charges—in numerous instances. For a time at least shippers and receivers have been able to secure the benefit of lower transportation charges by use of the truck than they would have had to pay in shipping by railroad. Naturally, this fact has contributed materially to the success so far of motor-truck transportation.

One of the very best things to the credit of motor-truck transportation, in the opinion of many students of the subject, is the service which it has accorded to rural communities. This has done the railroads no harm; it has very probably benefited them considerably. It has tied rural communities to the marts of trade by a rapid and more dependable transportation service which cannot be otherwise than beneficial and constructive. In no other way could a satisfactory transportation service have been extended to these outlying places. Beyond the reach of railroads, they have been absolutely dependent for years on some form or other of highway transportation. Before the advent of the truck their freight service was irregular, slow, unreliable and expensive. The motor truck is the only agency which is now capable of reaching these communities and extending to them a service in the transportation of their freight as good as the urban communities possess. While it is doubtless impossible to calculate in terms of money the aggregate benefit which has resulted to these rural communities by reason of motor-truck transportation, at the same time it must be very great, indeed. Furthermore, it should be a permanent service—a lasting good—because there is conceivably no reason, other than a breakdown of the highways themselves, why this service should not continue to grow.

Destructive Functions

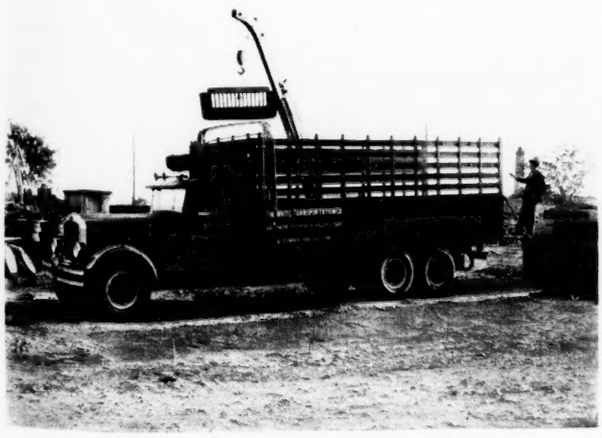
On the destructive side of its operations, there are several things charged against the motor truck as a public carrier.

First and foremost, perhaps, is the fact that it has sought the cream of freight traffic to the detriment of the railroads and without conferring upon the public a commensurate benefit. The railroad freight-rate structure, contrary to a popular belief in many quarters, has never been based directly upon the cost of service—that is to say, the general rate burden has not been spread out in such a way as to produce the same amount of profit to the railroad in the transportation of each and every article or commodity. It has been constructed more nearly in accordance with what the traffic would bear than any other principle. That means, of course, that a railroad might, and frequently

(*Continued on page* 42)

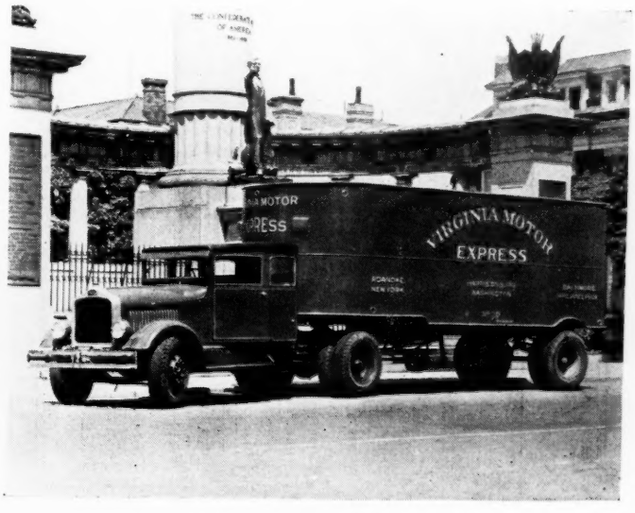
Heavy Duty White Truck

One of fleet of trucks of the Baltimore, Frederick, Hagerstown and Cumberland Division of the White Transportation Co., Baltimore



White Model 630 of Virginia Motor Express

Serving Virginia cities and Washington, Baltimore, Philadelphia and New York



SUPPLEMENTARY CREDIT FACILITIES

By

Kenneth C. Watson

Director of Public Relations
Commercial Credit Company
Baltimore

THE back-wash from the "Bank Holiday" of March presented a tightened credit structure to business in general. This situation has slowly but surely begun to relax, but the process of restoring confidence and stability in the whole scheme of credit is one of those things that requires time. Meanwhile, business and industry must find accommodation to carry on.

Perhaps of primary importance in the myriad of problems that confront our future economic welfare is that much talked of and discussed need on the part of industry for rehabilitation—modern machinery and equipment to allow a maximum of efficiency and economy in the production and distribution of goods. It is unnecessary to enlarge upon that fact. Industry is fully cognizant of it and further realizes that it can no longer ride along hoping, but must act and act without delay.

There are a number of large finance companies operating in this country today that offer industry the credit necessary to modernize and also provide service for the financing of shipments that may either be sold on an open account basis or over a long period on deferred payments. Industry has availed itself of this latter mentioned service to a great extent in the financing of distribution, but has been slow to accept the facilities available through finance companies for the modernization of its factories and plants.

The price that finance companies must put upon their service is the main reason why the instalment route to modernization is so frequently ignored. There is no secret about this price. It does amount to more in dollars and cents than the cost of loans secured by collateral. But the price of finance company service is not *interest*, as so many are wont to interpret it, but rather the cost of a service which includes interest on the money invested, legal work, credit investigations, collections, loss reserves, office facilities, management, administration and frequently insurance of the risk. In short, the price of finance company service is figured on a cost plus basis—actual costs of rendering service plus 2 per cent for profit.

There are numerous ways in which Industry can finance modernization such as borrowing from banks, mortgaging properties, issuing bonds, taking in new partners, but none of them are entirely devoid of disadvantages.

Money borrowed at bank, when possible, may be at the expense of needed working capital. Under present conditions, this may not necessarily be a vital consideration, but a big swing in the production scale would undoubtedly change the picture. Then, too, the short term accommodation has its disadvantages.

Mortgages and bond issues are remote measures in this present day. If there is anything left to mortgage, the mortgage itself would be hard to obtain on a favorable basis. Bond issues even under favorable conditions often cost more than finance company service and include the further problem of interest running to maturity.

New partners—well, that means to an end is always fraught with disadvantageous potentialities.

Modernization by the finance company route has distinct advantages that Industry for the most part overlooks. It does not jeopardize existing lines of credit, but, rather, becomes a supplementary credit. Payment in the majority of cases is made from the actual savings or increased earnings made possible. At the termination of the contract—savings or earnings having carried it to maturity—the equipment is fully paid for and there is no retirement expense. Savings or earnings thereafter may be set up as just so much additional profit.

There is one great mistake that Industry often makes in negotiating financing whether the money is coming from banks, bonds, mortgages or finance companies. That mistake lies largely in the failure to appraise modernization on the basis of its ultimate value. Industry seems to have a mental bogey in the belief that it should pay just so much for money and no more. Despite the fact that modernization in many instances, even on a minimum production basis, can be proved profitable in the face of a large money cost, anything beyond the bogey figure seems to completely distort Industry's perspective of value.

It is difficult to generalize in this respect because there are many cases where modernization is distinctly dependent upon substantial production to absorb its cost and still prove profitable. However, it is but a simple matter to appraise its possibilities and determine, at any given percentage of productivity, just what the savings may be. On this basis it is easy to weigh costs against benefits and make a decision. It is possible that one machine will pay for itself from its savings within one year on a 25 per cent basis of operation; another would have to be active 50 per cent of the time over a similar period to do the same thing. There is also a mass of modern equipment that kept active for but a fraction of its capacity will pay for itself within a reasonable period.

Industry would be more than surprised if it took stock of the business it has lost during the past three years due to its failure to modernize. One manufacturer that we know of frankly admits that had he installed certain new equipment two years ago which he now has in his plant, he could have had thousands of dollars in orders that he did not get. His old equipment was so expensive in operation that he could not compete. And he is wondering now just how many more thousands of dollars of business got away from him because he did not modernize and cut his production costs to a point where he could have solicited business at a distinct advantage.

While modernization may not be a panacea for all the problems of Industry, it is a remedy that once applied will undoubtedly prove a corrective for other ills which at this juncture seem to have no cure. Efficiency in production will influence its counterpart in administration. And the means to modernize may be had from the larger finance companies of the country if they are not available through sources considered more favorable.

The important consideration is not the cost of financing modernization but the value to be derived from it. When ultimate value is known to offset the cost the only other question relates to payment terms. In this connection, by the finance company method of acquiring modernization, Industry will find full sympathy in terms that are designed to allow payment from increased earnings or effected savings. Life and use, however, are considerations that must of necessity determine the length of time over which modernization may be safely financed.

NOVEL CHAMBER OF COMMERCE BUILDING

At Williamson, W. Va., in the heart of the billion dollar coal field, there has been erected a Chamber of Commerce Building which is constructed entirely of coal. In describing this structure, T. J. Browning, secretary of The Williamson Chamber of Commerce, says that it was designed by H. T. Hicks, architect of Welch, W. Va., and is of solid, substantial construction throughout.

The masonry foundation wall sets upon concrete footing, while the sidewalls are built entirely of coal from the Winifrede seam, which is one of several high grade domestic and steam coals found only in the Williamson coal field. The building is equipped with steel sash windows throughout, has Phillip-Carey Asbestos Shingle Roofing and the finished floor is laid with Johns-Manville Asbestos Composition Tile. The sub-floor structure consists of a layer of hollow tile, over-laid with two inches of concrete on which the tile floor rests. The coal walls of the building are approximately 12 inches thick. A two-inch air space is provided between the coal walls and the studding, which is of the usual frame construction. Wooden laths were used with the exception of the corners and arches of the windows, where steel laths were laid. An ordinary white coat finish was applied to the interior walls. A false fire place and mantle was constructed of ordinary brick suitable for that purpose, together with some bricks of coal which were sawed from larger pieces. The building is heated with low pressure steam heat piped from the Mountaineer Hotel building, which is located nearby.

The front of the building shows two pilasters of hand sawed coal, giving a perfectly smooth surface. These pilasters were laid up in black mortar, while the rest of the building was laid up in white mortar. Flood lights at the base of these pilasters make them stand out in bold relief at night, while the cove lighting system applied to the vestibule entrance makes a pleasing lighting effect.

This building was conceived by O. W. Evans, General Superintendent of the Norfolk and Western Railway Fuel Mines, who is president of the local Chamber of Commerce. The building is located on the Courthouse Square on a plot of ground made available by the County Court of Mingo County and occupies the most central and prominent location in the city. The building was made possible through the contribution of material which went into its construction and considerable cash was donated by the business people and citizens of the city of Williamson. Some labor was also donated by local carpenters, masons, plumbers, plasterers, painters, etc. It is the intention of the Chamber of Commerce to acknowledge these donations by placing on each side of the vestibule entrance, a plaque on which will be listed the names of those who donated material, labor or money.

Approximately 65 tons of coal were used in the construction of this building. This coal was mined and donated by the following companies: Leckie Collieries Company, Crystal Block Coal Company, Puritan Coal Corporation, Sycamore Coal Company and the Winifrede Block Coal Company. The entire outer surface of the building was given a heavy coat of All Purpose Varnish, which of course has a tendency to give a glossy effect and at the same time will act as a protection to any chemical action which might take place due to the exposure to the elements.

Giles Bend Cut-Off Completed

A new channel for the Mississippi River has been cut directly across the base of Cowpen Point, Miss., shortening the river by something over eleven miles. Known as the Giles Bend cut-off, the lower end of the project is about two miles up the river from Natchez. The cut-off is about 10,800 feet long. The location is largely through an old cypress swamp, and most of the old stumps had been covered over by silt deposited by the river. The varied stumps and logs made the work difficult and required the use of a powerful dredge. Work at this location was started by a long-boom clamshell dredge belonging to the McWilliams Dredging Company, of New Orleans. This machine took a "pilot cut" over a portion of the distance, making flotation and removing a portion of the stumps and the logs. The upper 3100 feet of the cut-off was made by two dragline machines belonging to the U. S. Engineer Department. The hydraulic dredge, Geo. W. Catt, operated by the Atlantic, Gulf & Pacific Company, New York City, began work at the lower end of the cut-off on April 6 and stopped work on May 25.

The hydraulic pipeline dredge has a 32-inch suction and a 27-inch discharge. The main pump is driven by a turbine of 3,500 to 4,000 horsepower, with speed reduction gears. Power for the cutter and winder machinery is taken from a turbo-generator, the cutter motor being of 500 horsepower.

This large dredge completed approximately 7700 feet of channel, with a bank of from 25 to 30 feet, and an average width, including the slopes, of from 150 to 170 feet, excavating a total of approximately 1,215,000 cubic yards.

This work is carried out under the supervision of Capt. H. B. Vaughan, who is area engineer at Baton Rouge, La., being in charge of dredging operations in that vicinity, including the work done by Government plant and that done by private contractors. The dredge, Geo. W. Catt, is in charge of Capt. W. W Williamson, being leased by the U. S. Engineer Department for use on flood prevention work on the Mississippi River.

$18,956,000 CONSTRUCTION AWARDS

May Industrial and Building Operations Highest of Year in the South

A MARKED increase in the valuation of awards for general building projects, all privately financed, for new industrial plants and the expansion of established enterprises, featured May construction activities in the Southern States.

Industrial Construction

Contracts awarded for industrial building work in all parts of the South in May set a new high monthly record for 1933, totaling $5,023,000, as compared with the April total for similar enterprises of $1,878,000, with $1,747,000 in March, $4,865,000 in February, and $1,277,000 in January. In five months this year contracts let for the expansion of the South's industrial capacity aggregate $14,790,000, which figure is exceeded only by awards for city, county, Federal and State buildings, amounting to $26,840,000. The major portion of the total, however, was rolled up in the first three months of the year, a sharp tapering off in governmental building construction being apparent in recent months.

The May total represents 57 individual projects, costing from $10,000 to $1,500,000 each. The most important private industrial project in the South is that of the Freeport Sulphur Company in Brazoria County, Texas, which was started early in the year. Additional awards made last month are estimated to involve an expenditure of $3,000,000. The handling of more than 3,300,000 cubic yards of materials in connection with the digging of canals for transportation and the filling of the plant site to facilitate drilling and other field operations, are features of this development for the mining of sulphur.

In recent weeks many textile mills in widely scattered parts of the South have gone forward with improvement programs, calling for the installation of modern high speed machinery, to replace obsolete units, the renovation of humidifying systems, the installation of improved lighting facilities, and the modernization of steam power plants.

Despite the predominance of textile projects, a variety of enterprises make up the total representing industrial awards in May. Oil refineries, garages, printing plants, garment factories, machine shops, breweries, bakeries, flour and feed mills, packing plants and bottling works are included in the list of recent awards.

General Building Operations

Contracts let for apartment houses and hotels, association and fraternal structures, bank and office buildings, churches, dwellings and stores totaled $2,202,000 last month, as compared with $1,937,000 for similar projects in the preceding month, and with $1,635,000 in March, $1,279,000 in February, and $1,215,000 in January. Thus, awards for buildings of this character have shown in each month of 1933 an increase as compared with awards for the preceding month, the May total being almost double the value of general building contracts let in the first month of the year.

Residential Building

Residential construction holds first place in general building awards in May with a value of $1,283,000, the high mark this year for this class of work. In April contracts for residences had a value of $948,000, as compared with $871,000 in March, $477,000 in February, and $500,000 in January. The substantial gain in residential construction evidently indicates a revival of private building activities, since it was this class of work that led the forward movement following the deflation of 1920. Practically all of these awards are for residences to be occupied by owners, rather than for purely speculative building purposes.

Store Building

Contracts last month for new store construction, renovations and improvements to established business places, totaled $387,000, the highest figure recorded in 1933 for this class of construction.

Roads and Streets

Road, street and paving work, which for so long dominated construction operations in the South, is virtually "marking time" now with awards being made only on a basis of the ability of the several states to finance such work out of funds available from gasoline taxes and motor vehicle license fees, constituting practically a "pay as you go" plan. Meanwhile, the various states are mapping out programs in anticipation of a substantial volume of new construction from funds to be made available as a result of the passage of the $3,300,000,000 Public Works bill by Congress. Most states, however, are going forward with maintenance activities in undiminished volume, determined to safeguard the investments already made in improved highways.

Drainage and Water Works

Sewers, drainage and water works projects estimated to entail an expenditure of $4,029,000 were placed under contract in the first five months of 1933, of which $538,000 represents May awards. This class of work has shown gains of late, indicating that Southern towns and cities are endeavoring to meet the needs for such facilities in keeping with business, residential and industrial growth. The availability of Reconstruction Finance Corporation funds for such projects promises to further stimulate work of this character in the Southern States, applications for many loans having been filed by municipalities and districts.

From all parts of the South come reports of advances in building materials prices. The tendency for construction costs to rise is expected to have a stimulating influence in coming weeks in spurring construction and building operations generally.

CONSTRUCTION ACTIVITY FOR MAY, 1933

	Contracts Awarded	Contracts to be Awarded
General Building		
Apartment houses and hotels	$265,000	$295,000
Association and fraternal	14,000	58,000
Bank and office	105,000	35,000
Churches	148,000	235,000
Dwellings	1,283,000	798,000
Stores	387,000	213,000
	$2,202,000	**$1,634,000**
Public Buildings		
City, County, Government and State	$5,088,000	$6,337,000
Schools	343,000	5,505,000
	$5,431,000	**$11,842,000**
Roads Streets and Paving	**$4,131,000**	**$6,797,000**
Industrial and Engineering Projects		
Dredging	$1,070,000	$300,000
Filling Stations, Garages, etc.	255,000	45,000
Industrial plants	5,023,000	45,067,000
Levees, Revetments, Dikes, etc.	22,000	.....
Warehouses	134,000	15,000
Sewers, Drainage and Water Works	538,000	2,693,000
Miscellaneous Projects	150,000	.....
	$7,192,000	**$48,120,000**
Total	**$18,956,000**	**$68,393,000**

Every user of cast iron pipe who reads this advertisement will concede that the probability of higher installation costs in the near future outweighs the possibility of a continuance of present low costs. Economies effected now in a cast iron installation will be perpetuated for a century or more by virtue of the unequalled long life of this material. No great amount of foresight is required to see that lasting benefits to the community will be gained by laying underground mains now. This Company is equipped at all times to meet any demand for cast iron pipe in sizes up to 84-inch.

UNITED STATES PIPE AND FOUNDRY COMPANY, BURLINGTON, N. J.

Sales Offices: NEW YORK, BUFFALO, MINNEAPOLIS, CHICAGO, PHILADELPHIA, PITTSBURGH, DALLAS, BIRMINGHAM, KANSAS CITY, CLEVELAND, SEATTLE, LOS ANGELES, SAN FRANCISCO

U. S. CAST IRON PIPE

IRON, STEEL AND METAL MARKET

STEEL operations at the end of May, for the industry as a whole, were at a rate of approximately 45 per cent of capacity. The broadening of iron and steel demand in practically all lines during the month was the outstanding feature of business improvement. Many factors contributed to the gains in iron and steel purchases during May. There was a continuation of farm implement production by manufacturers who had anticipated that declining demand at this season of the year would necessitate curtailed output. The production of motor cars and trucks in May is estimated to have exceeded original estimates by 25,000. Advances in the prices of finished steel lines announced during the month and the reluctance of mills to quote far ahead, had a stimulating effect on purchases for immediate delivery.

Light Steel Products Lead Demand

The demand for the light steel products was, however, out of all proportion to the demand for heavy products. For that reason there was a wide variation in operating rates in the various districts of the country. In the Eastern Pennsylvania district, where plants normally make heavy steel consumed by railroads, shipbuilding plants and general building contractors, the operating rate has been about 20 per cent of capacity; whereas in the Wheeling district, where the plants specialize in tinplate, the operating rate has been close to 80 per cent. Tinplate production shows further evidence of expansion in keeping with the demand, with many plants operating at 100 per cent of capacity.

Buying of light steel products by the automobile industry increased during May, makers taking large quantities of sheets and strips, it being estimated that the automotive industry ran at about 60 per cent of capacity last month. Light steel products were, also, consumed in volume by producers of electric refrigerators, washing machines, barrels and containers, radio sets, gas ranges, etc., numerous of the producers of such products reporting operations at the highest levels in three years.

Railroad Orders

Although the Pennsylvania System divided an order for 23,500 tons with the U. S. Steel Corporation, the Bethlehem Steel Company and the Inland Steel Company, and the Chicago-Great Western purchased 3,000 tons of rail, the carriers recently have sold a far greater tonnage of scrap iron and steel than they have purchased in the way of new material. However, the railroads are going forward with repair work and are scrapping obsolete equipment at an accelerated pace, which is taken to indicate that they cannot much longer remain out of the market. In fact, the Norfolk & Western is expected to shortly place an order for 10,000 tons of rail, and the New York Central will buy 7,000 tons.

Structural Steel

With the curtailment of governmental building work demand for structural steel has fallen off, thus affecting steel operating rate, which decline, however, has been offset by the increased demand in other lines, and despite the fact that the $3,300,000,000 public works bill does not provide for so great a volume of building construction as for general engineering projects, an appreciable demand will be created for steel for highway and bridge work, and for the construction of canal locks, hydro-electric plants, etc.

Youngstown District Active

With steel operations in the Youngstown district at close to 50 per cent at the end of May, executives predicted that production and shipments in June will exceed last month, which was the best in two years for the district. Strip and sheet production is mounting. The Republic Steel Corporation at the turn of the month added its ten-inch skelp mill to the active list. The Edgar Thomson rail mill reopened.

A new heavy cold rolling mill was added to the present equipment of the tinplate department of the Jones & Laughlin Steel Corporation's Aliquippa Works, representing an expenditure of $750,000 for a type of mill which is comparatively new in the industry.

Southern District at 50 Per cent Capacity

Early in June the Ensley Works of the Tennessee Coal, Iron & Railroad Company, Birmingham, resumed. The Champion brown ore mines in Blount county, of the Shook & Fletcher Supplies Co., reopened. The Birmingham Tank Co., affiliate of the Ingalls Iron Works Company, booked an order for steel drums for the Pan-American Petroleum Corporation. The steel making pace of the district based on ingot production at the turn of the month was estimated at well above 50 per cent, open hearth furnaces being called into service with the starting of railroading operations. A second blast furnace at the Fairfield Works may be placed in use this month. Pig iron production in the Birmingham district has shown a gradual monthly increase this year. Starting with 23,000 tons in January, the output grew to 29,580 tons in February, and declined slightly in March to 27,780 tons, but made up this loss in April, when production reached 30,970 tons. Follansbee Bros., Follansbee, W. Va., completed a $500,000 38-inch Steckel cold mill.

An increase of 20 to 30 per cent in the operating rate of various units of the Sparrows Point (Md.) plant of the Bethlehem Steel Company was reported during May. An improvement in demand for a variety of products for both domestic and foreign consumption resulted in the expansion of operating schedules. Wire products, sheets, pipe and tinplate were in heavier demand than for several months.

Prices Advance

Price advances or impending increases are stimulating purchases. Sheet prices have been advanced by leading producers $3.00 a ton for third quarter delivery. An increase of $2.00 a ton for hot rolled strip is reported. Concrete reinforcing bars are up $4.00 a ton. Pittsburgh fabricators anticipate a $2.00 higher rate a ton on plain structural shapes for the third quarter.

At the May meeting of the American Iron and Steel Institute, the Gary Memorial Medal, established in honor of Elbert H. Gary, founder and first president of the Institute, was awarded to Willis L. King, vice president of the Jones & Laughlin Steel Corporation. In presenting the medal Chairman Charles M. Schwab announced it was "for his outstanding achievement as a leader in inspiring high ideals and promoting confidence and good will in the welfare of the iron and steel industry." Mr. Schwab also presented the American Iron and Steel Institute Medal to Clarence B. Randall, vice president of the Inland Steel Corporation, Chicago.

"That's why we find Teletypewriter Service so valuable," says the Quaker Oats Company

THE Quaker Oats Company, like thousands of other concerns, uses Teletypewriter Service — typing by wire — to facilitate management and control of out-of-town units. Says the Vice-President in charge of operating: "The company conducts its business on the principle that reduced production costs and faster service to customers are essential in making a profit today. Teletypewriter Service helps us achieve both factors: therefore, it plays an important part in our business."

Teletypewriter Service keeps many of the company's widely separated units in continuous up-to-the minute touch with fluctuations on the Chicago grain market. In addition, the constant typewritten communication between headquarters and factories is invaluable in supplying customers' needs.

Teletypewriter Exchange Service permits written communications with customers and market sources. The connection may be for a few minutes or as long as desired.

Many firms use Teletypewriter Service on a "private line" basis, designated offices being continuously connected for periods ranging from one to twenty-four hours a day, depending on the volume of communications.

Teletypewriter Service can be adjusted to meet your particular needs. Your local Bell Company will gladly show how *your* organization might use it to advantage. A call to the Business Office will bring a representative at your convenience.

GOOD ROADS AND MOTOR TRANSPORT

Texas to Bridge Canals

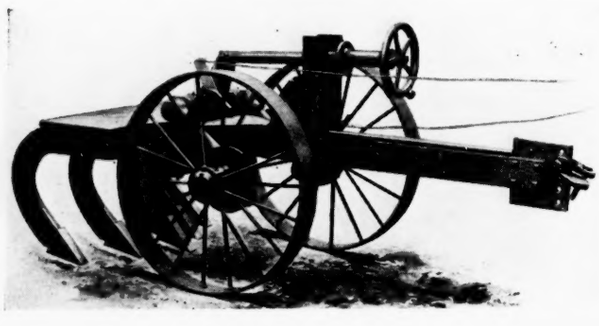
Recent action of the Texas Legislature in authorizing the State Highway Commission to assume the cost of building bridges on State highways which cross the Intracoastal Canal in Texas will simplify the work of the Intracoastal Canal Association in its efforts to meet conditions precedent to the completion of the authorized section of the canal from Galveston to Corpus Christi, according to Roy Miller, Corpus Christi, active vice president of the Association, which has its headquarters in Houston. Work is in progress between Galveston and the Brazoria County line.

Galion Road Rooter and "Pony" Grader

Two new developments of the Galion Iron Works and Manufacturing Company, of Galion, Ohio, consist of the Galion Road Rooter, a heavy duty machine for breaking up old macadam, gravel, oiled roads and streets, for loosening earth to be moved by graders or scrapers in the construction of fire breaks., reservoirs, dams, air ports and railroads, and the Galion "Pony" Grader, a light, straight wheel grader for two horse operation.

Outstanding features of the Galion Road Rooter, heavy duty model G-7950, are: Cable control for operating teeth raising mechanism, cable control for dropping teeth, handwheel for adjusting depth of cut, reversible self-sharpening manganese steel teeth, and Timken roller bearing mounted wheels. The frame is of 1-inch plate electrically welded: wheels, 46 inches in diameter and tires 6 inches wide: maximum depth of cut 12 inches: width of cut 48 inches: overall width 57½ inches, and weight 3800 pounds.

The Galion "Pony" Grader, while weighing only 1395 pounds, possesses strength and rigidity, due to thorough bracing and all-welded connections.



Galion Heavy Duty Rooter

$2,389,982 for Grade Separation

Figures released by City Engineer Hawkins of Birmingham, Ala., indicate that Birmingham's grade separation program just completed involved a cost of $2,389,982, more than a 40 per cent saving under the original estimate of $4,000,000. Cost figures include the Twenty-Second Street viaduct, Twentieth, Eighteenth and Fourteenth Street underpasses and smaller viaducts on Green Springs avenue and Eleventh avenue, north, at Twenty-Seventh Street.

Surface Roller for Highways

The Wheeled Roller Corporation, San Antonio, Texas, has introduced the Wheeled Roller, a surface roller declared to be particularly useful for the maintenance of roads, streets, driveways, loading platforms, landing fields, and for other purposes where asphalt and like surfacing materials are employed. It

Adapted to Bituminous Roads

is also useful and economical on some types of new construction. The roller may be hauled rapidly from one job to another on rubber tired, Timken-bearing wheels. An eccentric axle construction raises the wheels out of the way, bringing the roller surface in contact with the ground. Wheeled Rollers are furnished in standard sizes of a width of 36 inches and a weight of approximately 100 pounds per contact inch, or up to 200 pounds per contact inch.

Completing Bankhead Highway Section

Plans are under way for celebrating early in July the completion of a paved highway between Birmingham and Atlanta, according to Luther B. Liles, Anniston, Ala., president of the Atlanta-Birmingham division of the Bankhead Highway Association. The route is paved from the Alabama line to Atlanta and unpaved portions between Birmingham and the Georgia line are now being paved. The Couch Construction Company, Dothan, Ala., is paving approximately 17 miles across Cleburne County, at a cost of more than $325,000. The company has two complete paving outfits on the projects—one at Heflin and the other at Fruithurst, Ala. The Heflin outfit comprises a No. 55 Lorain crane and a Blaw-Knox bin, as a proportioning plant, a 27E Koehring Paver, Ord Finisher, Blaw-Knox Turntable, Worthington Road Pump, No. 30 Caterpillar Tractor and a road machine, in addition to miscellaneous equipment, including 2200 feet of Blaw-Knox forms. The Fruithurst outfit is composed of a Blaw-Knox bin and Lorain Crane No. 55, for the proportioning plant, a 27E Koehring Paver, Ord Finisher, Worthington Road Pump, Novo Road Pump, two Caterpillars No. 30, two Caterpillar Road Machines, 2200 feet of Blaw-Knox Road Forms and miscellaneous equipment.

Sub-contractors, having been awarded the work by the Couch Construction Company, include: H. L. Vandigriff, Atlanta, hauling, who is using several 2-batch Ford trucks, 2-batch Hugs and Indiana Trucks; Porter & Peck, Lake Charles, La., grading contractors, using a Caterpillar 60 tractor, road machine, shovel and miscellaneous equipment; C. R. Hopper, Griffin, Ga., grading contractor, and J. W. Nixon, Varnville, S. C., curing contractor.

The National Cement Company, and the Universal Atlas Cement Company, both of Birmingham, are furnishing the cement; steel is being supplied by the Kilby Car and Foundry Company, Anniston, Ala., requirements being about 2½ cars of steel per mile, as the entire pavement is being reinforced with deformed steel mats. All sand is being shipped by the Southern Sand and Gravel Company, Selma, Ala., while slag is being supplied by the Bessemer, Ala., plant of the Roquemore Gravel and Slag Company, Montgomery.

Serving The Construction Industry Throughout The South

For many years past—from Maryland down across the entire territory below the Ohio river, and even to points west of the Mississippi—PENN-DIXIE SOUTHERN plants have been serving the construction industry throughout that section.

Thousands of miles of Concrete Highways, and thousands of structures evidence the dependability of PENN-DIXIE. Our plants at Kingsport, Tenn., Richard City, Tenn., and Clinchfield, Ga., are so located that they supplement each other—thus the very largest projects as well as the smallest, can count on service that supplies the cement when needed.

Those interested in the use of cement and concrete are cordially invited to visit our offices at Chattanooga, Tenn., and Atlanta, Ga., where members of our staff will cheerfully render every possible service.

PENNSYLVANIA-DIXIE CEMENT CORPORATION

60 East 42nd Street, New York

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New York .....N. Y.
Philadelphia .....Pa.
Boston .....Mass.
Nazareth .....Pa.
Atlanta .....Ga.
Chattanooga .....Tenn.
Buffalo .....N. Y.
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PORTLAND PENN-DIXIE CEMENT

SOUTHERN PLANTS

Kingsport .....Tenn.
Richard City .....Tenn.
Clinchfield .....Ga.

OTHER PLANTS

Bath .....Pa.
Nazareth .....Pa.
Portland Point ....N. Y.
Des Moines .....Iowa

EQUIPMENT NEW AND IMPROVED

New Products at Century of Progress Exposition

A feature of the Century of Progress Exposition in Chicago is the number of new products on display by American manufacturers. New materials and new equipment for new applications in the industrial field include many novel developments of research. All steel and glass houses vie with the latest design and application of other building materials in attracting the interest of architects, engineers and other visitors to the exposition.

A new departure in building effects is the glass structure of variously colored glass blocks developed by the Owens-Illinois Company. Its walls are entirely of glass blocks decorated with glass tile. The roof is insulated by glass wool, and doors and canopies are aluminum.

Among the new developments in the field of copper and high strength copper alloys exhibited by the Copper and Brass Research Association is Crystal-cote which is a thin and flexible coating of glass on copper, and a new copper sheet as thin as paper for room decorations and automobile tops.

The American Radiator and Standard Sanitary Corporation is showing an array of products including a central indoor weather manufacturing plant for homes and all classes of buildings.

The story of steel's progress is portrayed by the United States Steel Corporation and its subsidiary companies. From operating models of an iron ore mine to the spectacular blast furnace and converter realistic in performance is depicted the manufacture of steel and the essential roles steel plays in all industry.

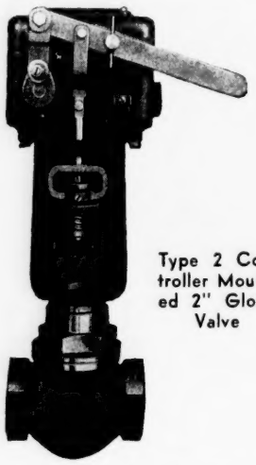
Electrical products for power, transportation, industrial equipment, lighting, scientific, air conditioning, and home uses illustrate the striking advance in the electrical field in the past few years.

Omicron "4-in-1" Waterproofing

Research laboratories of The Master Builders Company, Cleveland, Ohio, have developed a new liquid admixture for waterproofing which is said not only to supply impermeability, but to increase plasticity, strength and resistance to corrosion and weathering. This new product, known as Omicron "4-in-1" Waterproofing, is the result of a method of processing stearic acid, developed by Master Builders Laboratories in 1932. Tests by Pittsburgh Testing Laboratories and Robert W. Hunt Company are said to show that the Omicron ingredient increases resistance to the corrosive action of sodium sulphate and sulphuric acid solutions from 18 to 25 per cent.

Two Position Motor Operated Controller

To meet a demand for a sturdy, inexpensive controller of the two position



Type 2 Controller Mounted 2" Globe Valve

type to operate a valve, damper or rheostat, the Automatic Temperature Control Company, Inc., Philadelphia, Pa., has added a new unit known as Type 2. Where full pipe line capacity is required and tight shut-off essential, this controller can be supplied to operate valves of the globe body type in sizes up to 3 inches for pressures up to 250 pounds per square inch. With the medium at lower pressure, the controller has sufficient power to handle larger valves of the globe body type. If used for combustion control, valves are provided having similar flow characteristics and with means for adjusting the minimum and maximum settings. A feature of Type 2 controller, which is standard, is the ability to quickly remove the fulcrum stud, thus permitting the attendant to manually move the main operating lever.

Westinghouse Unit Air Conditioners

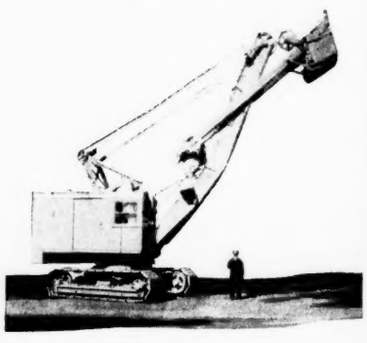
The Westinghouse Electric and Manufacturing Company, East Pittsburgh, Pa., has introduced a new unit air conditioner which cools and dehumidifies air in summer, heats and humidifies it in winter and filters and circulates it at all times. This unit is designed to be installed under windows or along the wall and, where space is limited, a special unit is available for wall or ceiling mounting. The latter is particularly adaptable for offices, lunch rooms and small shops. Of compact design and pleasing appearance, the unit is in keeping with smart decorations and appointments. Floor models are available in four sizes.

Northwest Two-Yard Shovel

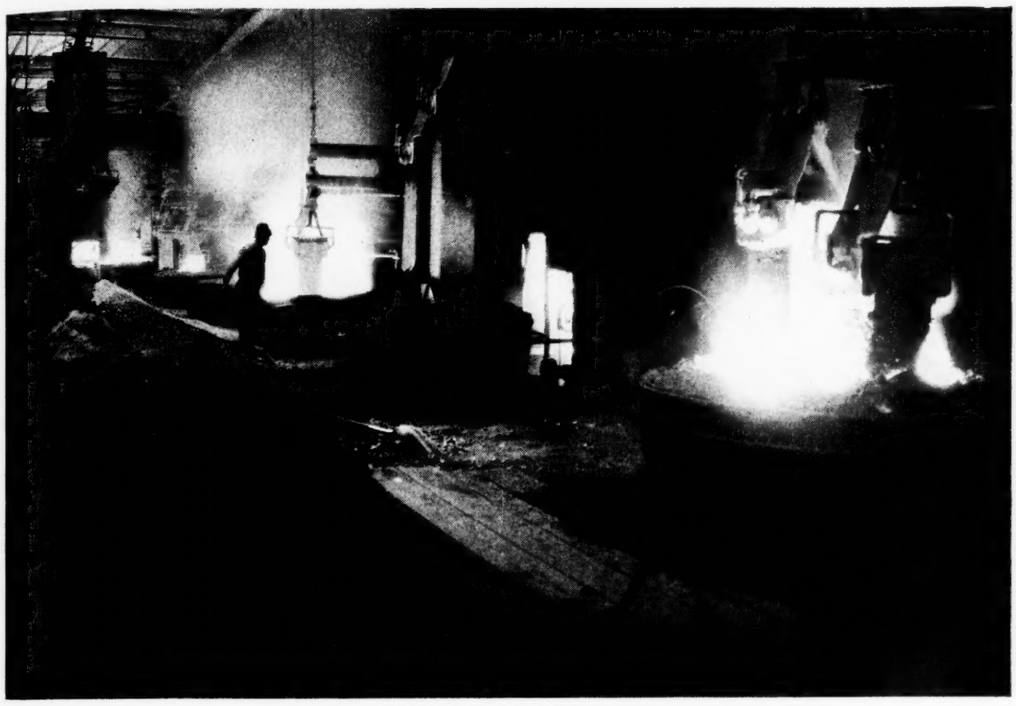
The Northwest Engineering Company, Chicago, Ill., among the world's largest exclusive builders of gasoline, oil and electric-powered shovels, cranes and draglines, announces the Northwest Model 80 Shovel of 2 cubic yards capacity. Both the boom and dipper sticks are of welded construction, the former being slightly cambered to make possible maximum operating ranges.

The shovel is powered with a special engine, a heavy duty power plant of 4-cylinder, Northwest-Twin City gasoline low fuel consumption, operating at slow speed and capable of offering maximum resistance to the drag-down loads of rock digging. A special Northwest crawler design provides unusual mobility, it is declared, making possible positive traction on both crawlers, even while turning, and assuring positive and easy steering. A "cushion clutch" on the hoist drum is said to transmit the full engine power, but reduces overload shocks 50 per cent. Engine drive gears are mounted on ball and roller bearings and run in an oil bath, the gears having helical cut teeth to assure quiet operation and the delivery of maximum power. Main clutches are shifted by a "Feather-Touch" control, making operation fast and easy, and all high speed shafts are mounted on self-aligning ball bearings.

Northwest Model 80 Shovel



"TP" Quality
STARTS IN THE ELECTRIC FURNACE



BUILDING quality into Aloxite "TP" Polishing Grain starts with the electric furnace process—with the Electro-metallurgical miracle of creating an abrasive principally from Bauxite specially selected at the mines—tested, checked and rechecked for quality in our laboratories. Here, under the closest scientific control, Aloxite Brand Aluminum Oxide is made—an extremely tough, hard, sharp abrasive having every quality demanded by the polishing trade.

The breaking of the crude pig, the crushing of the lumps to the grain form, the scientific method of washing, cleaning, grading of the grain, the painstaking elimination of plates and splinters—every step in the process carefully, skilfully handled.

Then the treatment of the grain to give it "Surface Tenacity"—a process through which every facet of each sharp, angular grain is roughed or etched so as to give it far greater tenacity or holding power—and you have the ideal polishing grain in

VISIT THE CARBORUNDUM EXHIBIT AT THE FOUNDRY SHOW CHICAGO

Aloxite Brand "TP" *THE POLISHING GRAIN WITH SURFACE TENACITY*

REG. U. S. PAT. OFF.

[WORKING SAMPLES IN ANY GRIT UPON REQUEST]

THE CARBORUNDUM COMPANY — NIAGARA FALLS, N. Y.

REG. U. S. PAT. OFF.

CANADIAN CARBORUNDUM CO., LTD., NIAGARA FALLS, ONT.

Sales Offices and Warehouses in New York · Chicago · Boston · Philadelphia · Cleveland · Detroit · Cincinnati · Pittsburgh · Milwaukee · Grand Rapids · Toronto, Ont.

(CARBORUNDUM AND ALOXITE ARE REGISTERED TRADE MARKS OF THE CARBORUNDUM COMPANY)

A Better Atmosphere

Competent observers consider that business from now on should mark an upward course. The small business, the decentralized industry, unquestionably, is facing a brighter future than for a long time.

In this situation sound commercial banking must take an important part.

We are prepared to render industry every reasonable service

Baltimore Commercial Bank
GWYNN CROWTHER, President
Main Office—26 South St., Baltimore, Md.
Capital and Surplus $1,350,000.00
Member Federal Reserve System

Electric Bond and Share Company

Two Rector Street
New York

FINANCIAL NEWS

Deposit Guarantee

The Glass-Steagall bill is still waiting passage by Congress. It was held up recently by an amendment proposed by Senator Vandenberg covering the immediate guarantee of deposits up to $2500, but it is understood the President does not favor this provision, and while the matter is being debated the bill is delayed.

The deposit provision in the Glass-Steagall measure provides for a graduated guarantee of deposits applying to members of the Federal Reserve System. It does not become operative for a year. The willingness to consider any form of guarantee, as one paper says, "is an amazing turn of events considering the state of mind of only a short time ago, which was definitely against any sort of a guarantee of deposits." In this day of experiments, however, unusual methods are accepted in the hope of putting the depression definitely behind us.

Building Association Payments

The United States Building and Loan League has made its report for the first four months of 1933; $700,000,000 was paid to investing and borrowing members during this period. Dividends paid on the first of January account for $175,000,000 of the total. Repayments to shareholders of the money invested, and cash loans to members on security of their shares amounted to $355,000,000.

There were advances to pay taxes, insurance, long-term credit to finance short-term mortgages and altogether, according to the report, it is very clearly demonstrated that individual thrift is the most dependable relief program ever devised.

The House of Morgan

Naturally as a matter of wide interest the Senate investigation of J. P. Morgan & Co. has filled the columns of the press. According to the point of view, the huge operations of our largest firm of private bankers have met with temperate comment or criticism as the facts in the investigation have been brought out. As one result of the hearing it seems clear that the capital gain and loss provisions of the income tax law will be changed. The country is rapidly turning toward the point of view that a sales tax, with no exemptions, offers a reasonable way out of our taxation difficulties.

Municipal Credit

The Secretary of the New York State Conference of Mayors says, in an article in The Daily Bond Buyer, "the preservation of municipal credit in the United States is imperative. Loss of it will seriously affect our entire business and capital structure, and the well being of every man, woman and child. State and local officials, for the last three years, have been striving to sustain it by readjusting as rapidly as possible municipal government and services * * * while paying maturities and interest on a huge public debt created by the demands of a prosperous citizenry * * * and carried almost unaided the unprecedented burden of providing relief for the destitute and work for the unemployed."

He says, further on, "our municipalities have, during the last three years, reduced the cost of local government to as low a level as is possible without seriously impairing essential administration and service. Municipalities have suc-

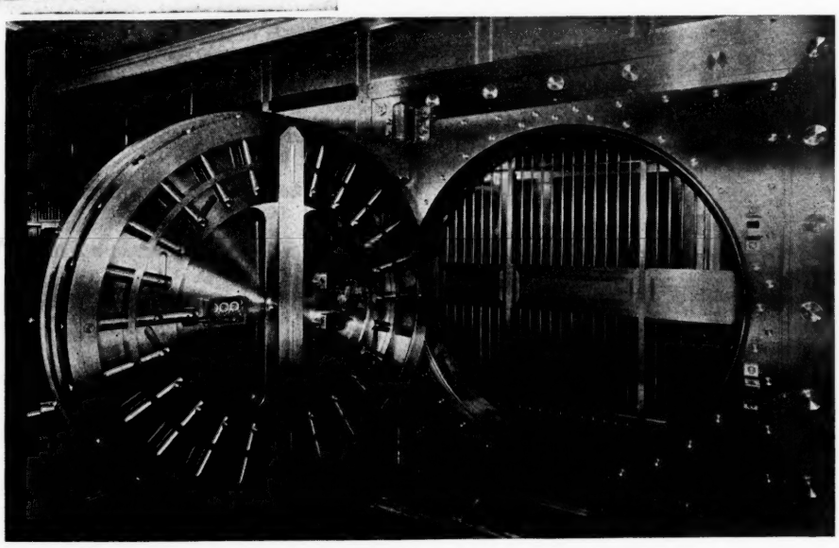
(*Continued on page* 34)

THE CHASE BANK
Paris

UPTOWN OFFICE 29 AVE. GEORGE V.

IN the heart of the uptown hotel district, this new Paris office of the Chase National Bank of New York serves a distinguished foreign clientele. Here one finds a complete banking service and a distinctive banking atmosphere as well.

The vault, of course, was built and installed by YORK. Beautifully designed throughout, every detail is fully in keeping with the spirit and atmosphere that surrounds it. Patrons often refer to it as "a perfect jewel box of a vault."



Your bank, too, can have the same service, skill and experience that has made YORK Vaults pre-eminent throughout the world. Write us regarding your requirements.

YORK SAFE AND LOCK CO.
• YORK, PENNSYLVANIA •

MANUFACTURERS AND BUILDERS OF THE WORLD'S GREATEST VAULTS

NEW YORK
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BOSTON
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YORK VAULTS

CLEVELAND
WASHINGTON
LOS ANGELES
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PARIS
HAVANA
TOKYO
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FIRE AND BURGLAR PROOF SAFES AND CHESTS

WHY did they buy?

Since 1929, more than five thousand business concerns have started our Group or Wholesale life insurance plans for their employees.

This is roughly twice as many as applied to us in any similar period before that well-known year.

Employers who have no such plan may be surprised at this statement. They are invited to ask us for "the reasons why."

THE PRUDENTIAL
INSURANCE COMPANY OF AMERICA
EDWARD D. DUFFIELD, President
HOME OFFICE, NEWARK, N. J.

Municipal Credit

(*Continued from page* 32)

ceeded as well as any private corporation by living within their diminishing incomes. * * * We believe that municipal credit can be maintained by the taxpayers paying their taxes when due and by the Federal Government authorizing the Federal Reserve banks to rediscount, under proper restrictions, municipal obligations issued in anticipation of the collection of taxes or assured revenues."

Federal Reserve Buying Bonds

The operations of the Federal Reserve Board in buying Government bonds to an initial amount of $25,000,000 is given credit as being one of the reasons for the rapid advance in the security markets. This is difficult to understand, in view of the fact that purchases last year for the same account aggregated more than $1,500,000,000 without having the effect of sending security prices up or loosening credit either. Psychology has played a large part in the recent upturn in business. The change from a deflationary program to an inflationary one, which has been in the making but not in the performance so far, is doubtless responsible for rising commodity and share figures. Nevertheless, the change is both welcome and encouraging.

City and Farm Mortgages

The Savannah News carried an interesting editorial comparing totals of city and country mortgages. Referring to the deluge of propaganda regarding the strain under which farmers with mortgaged property have lived, the editorial says "attention is now moving more and more to the plight of the city property owner. * * * In the seven years between 1922 and 1929, debts on city and town property increased 500 per cent, or a total of $35,000,000,000. * * * Three times the farm debt, but it has not provoked one-tenth as much furore among politicians in Congress as the farm mortgages have aroused."

Reasons for Confidence

Philip A. Benson, just elected President of the National Association of Mutual Savings Banks, a group that operates about 25 per cent of bank deposits in the country, and has assets of almost $11,000,000,000, says "there are abundant signs that the long period of deflation begun in 1929 has run its course. We may safely conclude that the turning point lies behind us, as the whole situation is fundamentally sounder than it has been in four years of declining values. If there were no other reason, we should take confidence from the fact that the decline has been definitely stopped and a restoration of values is under way. Mutual savings banks of the country serve 13,000,000 depositors."

Governor of the Federal Reserve

Eugene R. Black of Atlanta has been appointed to what is the most important financial position that the world holds. B. C. Forbes, in his financial column, says: "He is intensely human. He has none of starchy dignity. Eugene Black * * * though a member of the traditionally cold-and-calculating legal profession during the greater part of his life and though later a banker and still later Governor of the Atlanta Federal Reserve Bank, has remained essentially a democratic, warm-hearted human. If he chooses to remain long enough in office, he is likely to bring the Federal Reserve closer to the public, likely to strengthen the people's faith in it, likely to do much to transform its unpopularity. President Roosevelt has done well to choose such a citizen to preside over the Federal Reserve Board at this momentous, critical juncture in our history."

First and Merchants' statement of condition (which we shall be glad to mail you) gives an unusual picture of liquidity and soundness. First and Merchants' directorate—and its position as Richmond's oldest, Virginia's largest—confirm that impression.

•

FIRST
★ in Age ★
★ in Size ★
in Richmond

FIRST AND MERCHANTS
National Bank of Richmond
John M. Miller, Jr., President

13,200
Associated Lives Insured for $53,651,000

MORE than 13,000 Associated employees have their lives insured for a total of $53,651,000 under the Associated Employees Insurance Plan.

Since the plan has been in effect, $733,500 in death and disability benefits has been paid. By far the greater portion of these payments represents assistance which the families of deceased or disabled employees would have lacked entirely.

90% of Employees Insured

Each subscribing employee receives ordinary life insurance equal approximately to his annual earnings and participation in a group policy for a similar amount. He is thus insured for an amount equal to twice his annual pay.

Subscription by employees was voluntary. Representatives of insurance companies doubted that 75% would participate.

More than 90% subscribed.

One insurance magazine described the Associated plan as "an achievement unparalleled in insurance history." It has helped meet a widespread need for insurance among Associated employees, and to that extent has made them better employees. Better employees means better service for the public.

ASSOCIATED GAS & ELECTRIC SYSTEM
61 BROADWAY --- NEW YORK

PUSH DOWN COSTS WITH ARMCO HOT-ROLLED SHEETS

Here is how. **You can choose either ARMCO Hot-Rolled Sheets or Hot-Rolled and Annealed Sheets. You can specify sturdy steel, or rust-resisting INGOT IRON at a slight extra cost. Then, to meet your express purpose, the grade is given special processing, practically "tailored" to your individual needs.**

These are some of the things you will notice—and appreciate. ARMCO Hot-Rolled Sheets are exceptionally uniform in composition, true to size and gage. They work freely and surely in brake or press. They weld smoothly and densely. The tight-clinging scale takes paint—and holds it. Your production speeds along to its profit-goal, to the tune of lower shop costs and trim, well-finished products.

We should like to talk with you about your hot-rolled sheet requirements, especially if you have an urgent problem involving production costs. Put the question up to our nearest office and look for prompt, helpful action.

THE AMERICAN ROLLING MILL COMPANY

Executive Offices: **Middletown, Ohio**

DISTRICT OFFICES: ***Boston . Chicago . Cleveland Detroit . Middletown . New York . Philadelphia Pittsburgh . St. Louis . San Francisco***

ARMCO **IRON AND STEEL SHEETS**

Fitted Profitably to Your Needs

ITEMS OF INTEREST

THE DEPARTMENT OF AGRICULTURE announces that the general index of farm prices advanced 17 per cent during the month ending May 15, and is the largest advance recorded for any one month since April, 1919. Everything the farmer sells, from grains to vegetables, have advanced materially. Wheat was at the highest level since May, 1931. Cotton was 58 per cent higher than a year ago.

If these prices hold, and they bid fair to increase, harvest time should see the farmers back in the ranks of buyers. This will mean a great deal to the prosperity of the country.

NOTWITHSTANDING the experimental nature of relief measures sponsored by the Government, and they are admittedly experiments, the news of the month has been all to the good so far as business is concerned. The upturn has been general in scope and has brought with it an increase in employment, as well as an increase in wages in some instances. Some plants are working full time and others over-time, although the latter are not very numerous. Since the bank holiday and the coming into power of the new Administration, the spirit of the country has been definitely more optimistic. The next thing in order is to try to restore confidence on the part of depositors in banking institutions, so that commercial intercourse can proceed unhampered.

THE KANSAS CITY STAR reports a widespread investment movement in Kansas' farm lands. The notable fact about it is that nearly all recent farm sales have been made to city people buying the land for higher prices. Few sales, except of suburban tracts, have been made to people actually intending to live on the acreage. The market for real estate, both city and country, has been at such a low ebb in recent years that the news of land buyers showing their faith in the future makes good reading. Similar reports come from Texas, Georgia and other states of the South.

THE NATIONAL INDUSTRIAL CONFERENCE Board reports that the wealth of the United States shrank from $362,000,000,000 in 1929 to $247,000,000,000 in 1932, or from $2977 per capita to $1981 per capita. According to the report, the peak of our national wealth was reached in 1920 at $488,700,000,000, or $4587 per capita.

> "The determining factor in these striking changes," says the Conference Board, "was not a change in the volume of the physical assets of the nation, but rather in the rates at which, according to the varying price levels, those assets are valued. As a matter of fact, there is well-grounded belief that despite the figures cited the physical assets of the nation were greater in 1932 than 10 years before."

TEXAS is said to have a salt dome 3000 feet thick underlying a section of the state. It is referred to as "one big lump of salt" containing 20,000,000 tons, 90 per cent pure.

IN studying the proper use of the fund of more than $3,300,000,000 proposed in the Public Works Bill before Congress, it has been urged that attention be given to the necessity of clearing up slum localities in our metropolitan centers. At the Realtors' convention in Chicago on June 15 this subject will be discussed. Outside the central business district in almost every American city there is located an in-between district apparently not used for residential purposes nor likely to be occupied for any considerable industrial use. Cleveland and Chicago are both giving intensive study to this situation. Chicago has a plan, the central idea of which is for neighborhood cooperation by the property owners them-

selves. Under it some 40 houses in six blocks have already been reconditioned.

A landscape engineer recently presented a plan for such improvements in the City of Baltimore. It was remarkable for its utilization of places, passed over every day by tens of thousands of people, that could be utilized to the best advantage as beauty spots or possible commercial localities that are stagnant today because no attention has been given to the removal of the unsightly edifices that occupy the tracts.

THE SOUTHWESTERN TRADE CONFERENCE, participated in by those interested in foreign trade in the states of Texas, Kansas, Missouri, Oklahoma, Arkansas, Louisiana and Puerto Rico, met in Galveston and adopted a resolution pronouncing the St. Lawrence Waterway Treaty as "economically unsound" and "whereas such development will, in a large measure, divert commerce from its natural trend and away from those agencies which have been created to handle such commerce efficiently." The Conference protested against "expenditure of public funds for the purpose named."

ITALY is calling for a reduction of working hours to avoid reducing employment and has issued orders through the General Confederation of Industry for plants to take on added personnel in place of permitting over-time work.

MR. BRISBANE refers to the Florida Senate having proposed a constitutional amendment exempting homesteads from all taxation up to $5000. This proposition has many advocates in other states, as well as advocates of the exemption of land from taxes. One thing is clear. The privileges of citizenship carry the obligation to pay proper tax charges. The form such taxes should take, however, opens a field for wide discussion. The sales tax would go a long way toward settling many of these questions. It is an equitable tax and would apply to all classes without distinction or favor, which is right and as it should be.

THE DALLAS NEWS SAYS:

"Whether Federal control is extended to the oil industry depends largely on the success of the 'industrial partnership' program of the President. The concentration of authority over production, transport and price in the hands of Secretary Ickes, under the bill introduced, differs not at all in principle from the plan under which general business and industry is to be regimented into prosperity. The conservation of a vital national resource makes direction by the Department of the Interior instead of by the industrial czar a necessity."

THE POST OFFICE reports that according to statistics available the bottom of the depression, so far as postal receipts are concerned, was reached in March, 1933, when the daily average receipts were 8.45 per cent lower at 50 selected offices than the receipts at the same offices in March of the year previous. For the first time since the beginning of the depression, the average daily receipts at these post offices showed a gain of 2.02 per cent during April.

IMPORTS of merchandise into Soviet Russia for the first three months of 1933 declined 57 per cent, while exports during the same period declined 22 per cent. The Commerce Department at Washington says "exports from Soviet Russia reflected the depressed condition of agriculture. Shipments of all grains, legumes, oilseeds and cake, tobacco and fruits showed great reductions compared with those of 1932."

GREAT BRITAIN continues to report gains in British employment. This is especially true in the building industry and public works contracting. Among other lines showing increases are brick and tile manufacture, dock and harbor, road transport, etc.

THE MARCH OF CRIME —STOPPED!

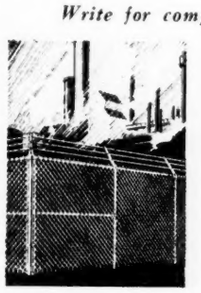
Dramatic but all too common headlines in the day's news. Theft, property damage and petty pilfering crowd the columns of our papers. These things can happen to you, just as they have happened to hundreds of others.

How can you guard against them? The answer lies largely through prevention—by the positive protection of property—by impassable and dependable Cyclone Fence.

Economical because of its reasonable price and the elimination of maintenance costs. In other words—this ever alert guardian is not an expense—but a dividend paying investment.

Cyclone Fence is made of copper steel and heavily galvanized after fabrication to resist rust. Available in a variety of styles—and quickly erected by factory trained men if you desire.

Write for complete information. Address Dept. M



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General Offices: Waukegan, Ill.
Branches in principal cities
SUBSIDIARY OF UNITED STATES STEEL CORPORATION
PACIFIC COAST DIVISION:
Standard Fence Company
Oakland, Calif.

Cyclone—not a "type" of fence—but fence made exclusively by Cyclone Fence Company and identified by this trademark.

Cyclone Fence
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INDUSTRIAL NEWS

Adds Latest Type Cold Rolling Mill

The Jones & Laughlin Steel Corporation, Pittsburgh, Pa., is installing a heavy cold rolling mill as added equipment to its tinplate department of the Aliquippa Works. The installation will involve a cost of approximately $750,000, according to a company official, and will represent the most modern type of mill of this character. None of the present equipment will be displaced, it is explained, and no additional steel products will be added to the company's already extensive finished steel line.

Business Increase

J. B. Meriam, president of The Meriam Company, Cleveland, Ohio, reports a steady increase in the company's business. Southern sales included a direct coupled gas engine generator set of 110 H. P. for operating the lighting and power system of the Forest Hotel, Hattiesburg, Miss.; a 100 K. W. gas engine generator unit for the Fort Worth Macaroni Company, Fort Worth, Tex.; manometer and flow-meter for a well known oil company, and for a carbon black manufacturing plant at Borger, Tex.

Displacement Pumps for Oil Burners

For efficient combustion, oil burners should be supplied with oil at constant pressure to the end that the oil may be atomized uniformly at all times. When displacement pumps deliver intermittently or with pulsation, it is said, a considerable portion of energy is wasted in pumping. To meet these objections, the De Laval Steam Turbine Company, Trenton, N. J., has developed the De Laval-Imo pumps, giving steady pressure for the burners. In addition, they are adapted with a pressure control device for steam turbine drive.

Observe 50th Anniversary

The E. M. Holt Plaid Mills, Inc., Burlington, N. C., celebrated on May 5 the 50th anniversary of the establishment of the mills. Officials of the company distributed more than $6,000 in cash bonus to employes, representing 5 per cent of the mill's earnings from January 1 to April 1. In turn, Lynn B. Williamson, of Greensboro, president of the company since 1921, was presented a watch by the employes as a token of esteem, while Walter M. Williams, secretary and treasurer, was also presented a gift.

Small General Electric Oil Furnace

The General Electric Company, Schnectady, N. Y., through its air conditioning department, announces a new, smaller oil furnace, similar and additional to the larger unit announced last year. It is designed for small homes, having slightly over half the heat output of the larger model, and incorporates no alterations of fundamental principles. It may be used with steam, vapor or hot water systems. With the addition of the G-E warm air conditioner, it may also be used with air duct heating systems.

Water Power Equipment

Since 1921, when it went into the water power equipment field, the Newport News Shipbuilding and Dry Dock Company, of Newport News, Va., has built many turbines, valves, regulating gates and trash rakes for hydro-electric power plants. Many of these plants are Southern enterprises and rank among the country's outstanding projects of this character. Some of them, together with plants in other sections of the country in which the company has installed various units of water power equipment, are briefly described and illustrated in an unusually attractive booklet.

Among Southern projects covered in the publication are: The Calderwood Dam on the Little Tennessee River at Calderwood, Tenn., built by the Knoxville Power Company; a dam at Cookville, Tenn., built by the City of Cookville; Conowingo development on the Susquehanna River in Maryland, built by the Susquehanna Power Company; Flint River dam and power house near Cordele, Ga., built for the Crisp County Hydro-Electric Power Commission; dam and tainter gates at Jackson Bluff on the Ochlocknee River near Bloxham, Fla., built for the Florida Power Corporation; Lock No. 7 on the Kentucky River at High Bridge, Ky., built by the Kentucky Hydro-Electric Company; Locks Station on Appomattox River at Petersburg, Va., built by Virginia Electric and Power Company; Wilson Dam and Power

(Continued on page 40)

Water Purification Plants

Any Type—Any Purpose—Any Capacity

Dry Chemical Feed Machines
Swimming Pool Filters

E. W. BACHARACH & CO.

Rialto Bldg. Kansas City, Mo.

WATER FILTERS

Pressure and Gravity type for Municipal Water Supplies, Rayon Manufacturing Plants, Textile Finishing Establishments, Raw Water Ice Plants, Laundries, Etc.

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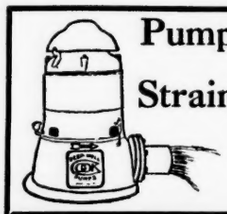
FILTER GRAVEL

Washed Sand and Gravel for Concrete Roads and Buildings
Filter Gravel, all sizes—Building Bricks

FRIEND & CO., INC. River St., Petersburg, Va.



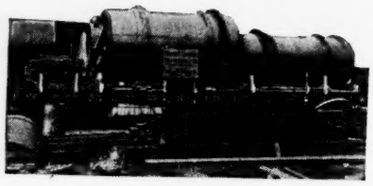
Pumps—Deep-Well Plunger and Turbine
Strainers—and other well supplies

WATER PRESSURE SYSTEMS

A. D. COOK, INC.

Lawrenceburg, Indiana

SOUTHLAND PRODUCTS
—WELDED OR RIVETED—



We now manufacture and offer to the trade tanks in all sizes for pressure or gravity work. Also other steel equipment of either

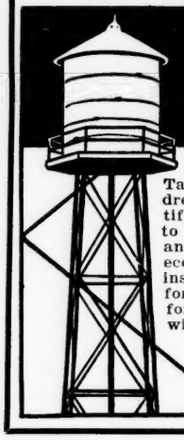
WELDED OR RIVETED CONSTRUCTION

This applies to field as well as shop built equipment.

Write us for information and quotations.

CHATTANOOGA BOILER & TANK CO.

CHATTANOOGA, TENN.



DAVIS CYPRESS WATER TANKS

It's no unusual fact for a Davis Tank to last 25 to 35 years, as hundreds of southern industrial plants can testify. Cypress need only be outside-painted to last indefinitely; keeps water cool and sweet, and when Davis-built represents a major economy in equipment cost, either inside or outside the plant. Ask for estimates — any size, shape, for any purpose. Our new catalog will also be mailed on request.

DAVIS CYPRESS TANKS

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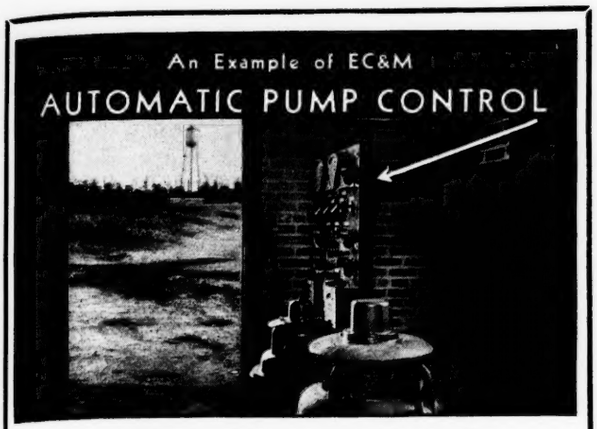
An Example of EC&M

AUTOMATIC PUMP CONTROL



From Deep Well to Clear Well to Elevated Tank *automatically*

Clear Well is .....7 ft. Deep
1st Deep Well Pump starts at 6 feet
2nd " " " " " 5½ feet
1st Booster Pump starts at 250 feet
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Shut off at 265 feet

Let EC&M Solve Your Pumping Problems

THE ELECTRIC CONTROLLER & MFG. CO.
2700 East 79th Street, Cleveland, Ohio. M.B. 6-33
Gentlemen:
Please send me Bulletin 1100-A describing EC&M Automatic Pump Control for use with.....Volts (a.c. or d.c.) motors.
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Address .....

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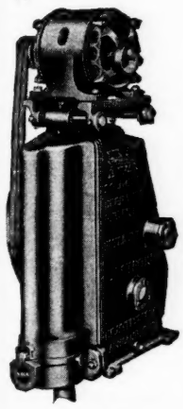
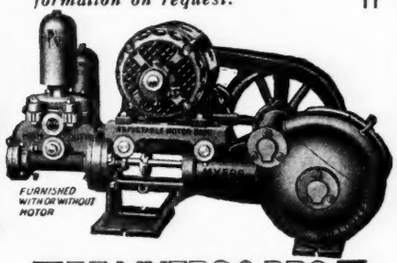
POWER PUMPS

Today, when buyers are extremely critical, Myers Self-Oiling Power Pumps and Water Systems offer greater values than ever. Considering the completeness of the Myers line, its outstanding quality, its wide adaptability, its favorable low prices—its possibilities for economy and dependable service are so apparent that more and more users the world over are recognizing Myers superiority and are taking advantage of it through improved power water facilities for home, farm or factory. It will pay anyone who is interested in new pumping equipment to thoroughly investigate the Myers line of Hand and Power Pumps for every purpose.

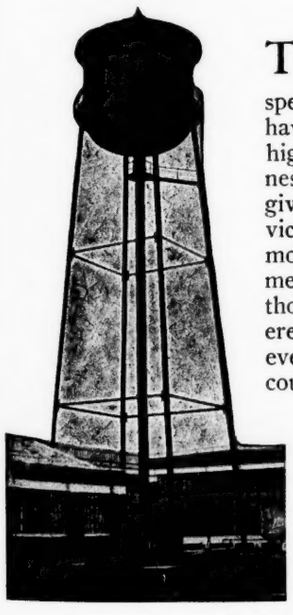
New Catalog and complete information on request.





THE F.E.MYERS & BRO. CO.
ASHLAND, OHIO.

· COLE ·



TANKS and towers designed to meet any special requirement. They have been developed to a high state of effectiveness and are designed to give uninterrupted service. They embody the most revised requirements of insurance authorities and have been erected in practically every section of the country.

We also specialize in Fuel Oil Storage Tanks, Oil and Water Storage Tanks, Acid Tanks, Vats, Chemical Tanks, Storage Bins, Stacks, and other forms of Steel Plate Construction.

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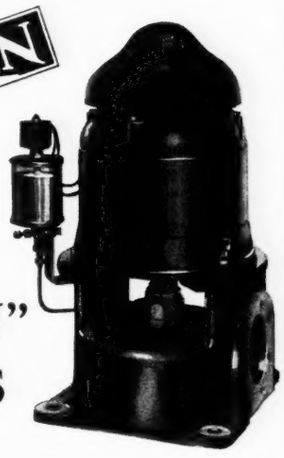


NEW "AMERICAN" TURBINES

The new "American" Turbines have all the features that have made them standard equipment in municipal pumping stations for many years—efficiencies that materially reduce the present cost of pumping water. These new turbines are designed for wells as small as 6 in. in diameter, and are equipped for either oil or water lubrication. "American" engineers and sales offices will gladly furnish data to municipal engineers or officials on this new, low pumping cost turbine.

THE AMERICAN WELL WORKS

General Offices and Factory
AURORA, ILLINOIS
Branch Offices
CHICAGO NEW YORK
Agencies in all principal cities

Water Power Equipment

(*Continued from page* 38)

House at Muscle Shoals on the Tennessee River near Florence, Ala., built for the United States War Department; New Catawba Dam on the Catawba River near Fort Mill, S. C., built by the Duke Power Company; hydro-electric development of Carolina Power and Light Company on the Yadkin River near Norwood, N. C.; dam and power plant on the Osage River near Bagnell, Mo., built by Union Electric Light and power Company, and Oxford Dam and Power House of the Duke Power Company on Catawba River near Hickory, N. C.

The publication also presents a description of the company's Hydraulic Laboratory, located about six miles up the James River from Newport News, in which its water power machinery is tested, with elevation views and floor plans of the building. It also shows a map of the United States, upon which are designated locations where water power equipment has been installed by the Newport News Shipbuilding and Dry Dock Company, and the character of the equipment so installed.

Vitrified Coating for Refractory Walls

The Mildon Engineering Company, Inc., which recently moved to new offices in the Cunard Building, 25 Broadway, New York, has developed a furnace glaze or vitrified coating for refractory walls in connection with its furnace and combustion work and primarily intended for its own installations. Under the name of Fire-Kote, the company is now putting it on the market. This product fuses progressively between 1200 and 2800 degrees Fahrenheit and does not re-fuse or run at much higher temperatures.

Detroit Stokers in the South.—The Detroit Stoker Company, with sales offices and engineering department at Detroit, and main office and works at Monroe, Mich., has issued an attractive and interesting booklet on "Economical Steam Generation in the South." The publication is devoted entirely to Southern installations of Detroit Stokers and present testimonials regarding efficiency and economy of these units, while illustrating actual installations and showing many prominent Southern plants and buildings, in which Detroit Stokers are used.

Modern Store Fronts. — The Pittsburgh Plate Glass Company, Pittsburgh, Pa., has issued a booklet in the interest of its Store Front and Carara Glass departments, describing and illustrating a number of installations including Carrara Structural Glass, Easyset Metal Store Front Construction, paint, glass, etc. Of the installations shown, it is significant that the majority of them are in Southern communities.

Concrete Truck Mixers, Etc.—Among the largest manufacturers of concrete mixers in the world, with thirty years' experience in the design and construction of concrete mixers and placing machinery, the Jaeger Machine Company, Columbus, Ohio, has issued a large, illustrated booklet devoted to Jaeger Truck Mixers, Agitators, Transfer Leaders, and Concrete Spreaders.

Concrete Floors.—The Portland Cement Association, Chicago, Ill., recently issued two 4-page folders, entitled, "Concrete Floors for Industrial Buildings" and "Concrete Floors—How to Build Them." The Association has also published a working "Specification for Bonded Concrete Floor Finish."

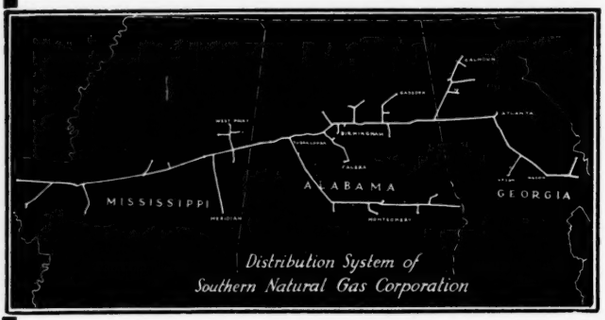
Inland Steel and Central West.—Planned with reference to the Century of Progress Exposition, a book issued by the Inland Steel Company of Chicago presents a brief illustrated history of the development of the company concurrent with the development of the Central West. It is bound in a striking cover which has the silver sheen of polished steel. The book illustrates and describes the production of steel and the wide diversity of the applications of steel in the modern world.

Machinery Price List.—The Cincinnati Machinery and Supply Company, Cincinnati, Ohio, has issued a new price list covering a large number of machinery units, including bolt cutters and pipe threaders, drill presses, radial drills, gear cutters and hobbers, grinding machines, hack saws and cold saws, keyseaters, lathes, turret lathes, milling machines, punch presses and sheet metal machinery, boring mills, planers, shapers, electric motors and miscellaneous units.

Welding Enduro Stainless Alloys.—Under the title, "The Welding of Enduro Stainless Alloys", a booklet is being distributed by the Republic Steel Corporation, Youngstown, Ohio, presenting comprehensive information on various welding methods as applied to different types of Enduro Stainless Alloys, including Electric Arc Welding, Gas Welding, Spot and Projection Welding, Seam Welding and Flash Welding.

Air Conditioning.—The Niagara Blower Company, Buffalo, N. Y., manufacturers of air engineering equipment, have prepared a loose-leaf volume of new engineering data designed to simplify the problem of making air conditioning equipment more widely applicable.

NATURAL GAS
THE
IDEAL FUEL



Distribution System of Southern Natural Gas Corporation

Many large and small manufacturing plants located on our lines have found by experience that

NATURAL GAS IS THE IDEAL FUEL

As a boiler fuel, from the small boiler of the tailor shop to the largest boiler in the modern power plant, no other type of fuel combines

ECONOMY, EASE OF OPERATION, CONTROL, AND CLEANLINESS TO THE EXTENT PROVIDED BY *NATURAL GAS.*

Let us study your fuel needs. We are saving money for your competitor—why not for you?

YOU ASSUME NO OBLIGATION IN WRITING TO US FOR INFORMATION.

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WATTS BUILDING **BIRMINGHAM, ALA.**

LIMA

SHOVELS-CRANES-CLAMSHELLS-DRAGLINES

3-4 yd., 1 yd., 1 1-4 yd. and 1 1-2 yd.

(A TYPE AND SIZE FOR EVERY JOB)

The Ohio Power Shovel Company

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SAND PUMPS

A wide range of types in sizes 4" to 15"

For belt drive and for direct connection to motor

Illustrated booklet on request

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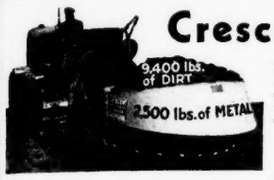

Crescent Scraper—

Here is a drag bucket that combines great digging ability with ease of operation. Designed either for cable haulage or tractor haulage. Write for catalog.

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WILLIAMS Buckets Trailers

Buckets in Power-Arm, Multiple-Rope, and Dragline types—for every need . . . Arch-Girder Trailers from 5 to 60 tons capacity. Write for descriptive bulletins.

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The Blue Book of Southern Progress

New Edition Will Be Ready This Spring

THIS standard reference work, which for many years has been recognized as the outstanding authority on the South's resources and development, is now in course of preparation. Its value to industrialists and business men generally, and students, is recognized.

It is a day for the small business. The number of small plants and enterprises that have been established in the South during the period of depression makes a very favorable showing.

No well-informed man can afford to be without the facts presented in this important work and it is desirable for communities, as well as public service enterprises, to distribute this book widely throughout the country.

Orders are now being received. The price is 50c per single copy and on quantity orders rates will be quoted on application.

The BLUE BOOK OF SOUTHERN PROGRESS

Manufacturers Record Publishing Company

BALTIMORE, MARYLAND

Truck Transportation

(*Continued from page* 21)

does, make considerably more profit in the transportation of one commodity than it makes in the transportation of another. As a matter of fact, it is doubtful if a freight-rate structure based on any other principle would have permitted the great and widespread development of the country that has taken place up to this time. In making rates in accordance with what the traffic will bear, the result usually is to charge relatively more profit for the transportation of the higher-grade goods than is charged for the transportation of the lower grades. This principle rests upon a sound economic basis. It permits the development of a rate structure which will allow all articles of commerce to move with the greatest possible freedom, thus stimulating agricultural and industrial development and enabling commodities produced in different sections of the country to be interchanged on a national scale. A simple illustration will suffice to demonstrate how this system of making rates works out in practice. It costs a railroad very little, if any, more, for instance, to transport a bale of silk than it does a bale of rags. If the same profit were realized in both cases, however, the rags would ultimately cease to move and the silk would not be encouraged or induced to move any more freely. A substantial loss of high-grade freight means that the level of railroad rates on low-grade commodities must ultimately be increased if the railroad-transportation systems are maintained in full vigor. When the motor truck, therefore, takes any considerable amount of the high-grade freight away from the railroads, the low-grade freight must make up the difference, either through the necessity of supplying a deficiency in revenues caused by the loss of business in a class of freight yielding the greatest profit or because the railroads must, for competitive reasons, readjust their rate structure by reducing the level of rates on the high-grade articles. To those who have studied the question, this is a more serious matter than the public has been willing to concede. Unless the commerce of the country grows rapidly enough to support all transportation agencies adequately, it simply means that an ultimate redistribution of the general rate burden must be made in such manner as to reduce the aggregate amount paid to the railroads by the high-grade articles with a commensurate increase in the amount paid by the low-grade freight. Either that, or the railroad-transportation systems must be pared down until the traffic which they are able to obtain will yield the revenue to support them. them.

Although there have been outstanding exceptions from the beginning, it is safe to say that, in the majority of cases, trucks have operated on the highways without affording sufficient protection to the public against loss of life and property. Public-liability and property-damage insurance seems to have been the exception rather than the rule. Reckless driving has also been quite evident. Innocent members of the public have thus been compelled to suffer losses which should have been borne by others. State laws have remedied this situation to a considerable extent, but the problem has not yet been fully solved.

To a great extent, too, the truck has failed to pay its own way—that is to say, it has failed to change rates sufficient to support its service. This necessarily means that at least a part of the burden of supporting such service has been borne by other interests. Frequently the burden has fallen on the shoulders of truck dealers. At any rate, unless the interests directly served support the service it is not in a sound economic condition. The truck is also accused in many quarters of failing to make a sufficient contribution to the construction and maintenance of the highways. This is a controversial question. Some States are requiring the payment of special mileage taxes and limiting the weight and size of trucks.

Truck operations have also disrupted established rate structures with a consequent disturbance of the business equilibrium. Economic burdens have been shifted. Trade practices have been demolished in many instances. Commercial relationships, delicate in nature and the outgrowth of years of adjustments and readjustments, have been disrupted. There has been a tendency, too, to localize industry. If these things had been adequately compensated by advantages and savings resulting from truck operations, then there could be no legitimate complaint against the truck on this account. Up to date, however, these advantages and savings have not become apparent. The businesses that have suffered in this respect have been left to work out their own salvation.

Finally, public truck service, in a great many cases, has been too irregular and undependable properly to maintain commerce and industry. Of course, there have been regular truck schedules, but more frequently trucks have operated without schedule. They have sought the large freight movements and shunned the small ones. They have operated when business was good and quit when it was not good. Business has thus been left in a state of uncertainty. What business needs in the way of transportation is a regular, continuous and adequate service at a reasonable cost.

Importance of the Peanut Crop in the Nation's Food Supply

By Bob Barry

Tom Huston Peanut Co.,
Columbus, Ga.

Peanuts have a great agricultural value to the South and much food value to the nation. The aggregate value of peanuts, their products and by-products, is between $50,000,000 and $75,000,000 a year. More than 2,000,000 acres are annually planted to peanuts, on a commercial scale, in 12 states, all in the South. About 60 per cent of the acreage is harvested for the nuts and the balance grazed and converted into meat.

Peanut Acreage and Production, 1932

States	Acres	Pounds
Alabama	466,000	242,320,000
Arkansas	37,000	19,425,000
Florida	273,000	113,295,000
Georgia	838,000	398,050,000
Louisiana	22,000	9,350,000
Mississippi	36,000	23,760,000
North Carolina	294,000	276,360,000
Oklahoma	48,000	28,320,000
South Carolina	23,000	14,720,000
Tennessee	14,000	10,500,000
Texas	229,000	125,950,000
Virginia	141,000	141,000,000
Total	2,421,000	1,403,050,000

Few crops in the South have shown such a remarkable expansion in the past 30 years. In 1900 the 12 states reported 516,000 acres in peanuts. By 1910 the area had increased to 869,000 acres and in 1932 to more than 2,400,000 acres. Estimated production, including nuts gathered and grazed, increased from 357,810,000 pounds in 1900 to 581,730,000 pounds in 1910 and to 1,403,050,000 pounds in 1932.

Peanuts as a food for man and beast are unexcelled. The following table of principal food products shows how liberal are the proportions of the food elements in peanuts that are required in greatest volume. As the percentage of water is low in peanuts, when you buy peanuts you get food instead of water at food prices.

	Percentage					
	Water	Protein	Fat	Carbohydrates	Ash	Calories
Peanuts	5.2	29.8	36.6	24.4	2.0	2560
Wheat Flour	12.4	10.5	1.0	75.4	.7	1640
Dried Beans	12.6	22.5	1.8	59.6	3.5	1605
Raisins	14.6	2.6	3.3	76.1	3.4	1605
White Bread	35.3	9.2	1.3	53.1	1.1	1215
Round Steak	67.8	20.9	10.2	—	1.1	835
Boiled Eggs	73.6	13.6	12.0	—	.8	765
White Potatoes	78.3	2.2	.1	18.4	1.0	385
Whole Milk	87.0	3.3	4.0	5.0	.7	325
Apples	84.6	.4	.5	14.2	.3	290
Average	47	11½	7½	32½	1½	1123

Four of the six vitamins can be found in peanuts. Eight of the twelve minerals that build bone, teeth, etc. can be supplied by eating peanuts. In addition to this they are aromatic and palatable which starts them through the human body with a pleasant reaction throughout the nervous system. This causes all bodily functions to cooperate in the assimilation process. They are digestible, inexpensive and can be bought in small packages almost anywhere.

Quick shipments via rail, truck, barge or scow from Baltimore, Md., and North East, Md.

SAND
Washed
GRAVEL
And
SLAG

We Produce in Quantities to Meet Your Requirements

A Complete Organization

. . . . . with years of experience in successfully executing large construction contracts of various kinds is prepared to undertake the construction of

CONCRETE, MASONRY AND EARTH DAMS . . . DRY DOCKS . . . RIVER AND HARBOR IMPROVEMENTS . . . WATERWAYS . . . DEEPENING CHANNELS . . . DREDGING OF ALL KINDS . . . HYDRAULIC FILLING AND ROCK WORK . . . SEWERS . . . TUNNELS . . . RAILROAD CONSTRUCTION . . . . . .

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DREDGING

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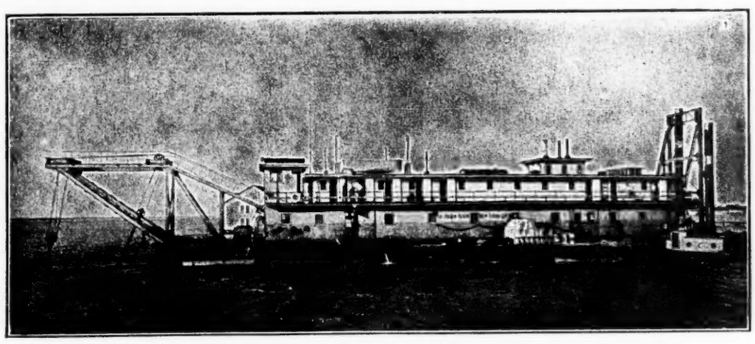
RIVER AND HARBOR IMPROVEMENTS—DEEP WATERWAYS AND SHIP CHANNELS



We are especially equipped to execute all kinds of dredging, reclamation and port works in Southern waters.
Correspondence invited from corporate and private interests everywhere.

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ASPHALTIC ROADWAY GRAVEL

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Motor Trucks, Buses, Trailers

SINCE 1910

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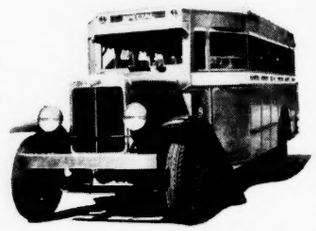

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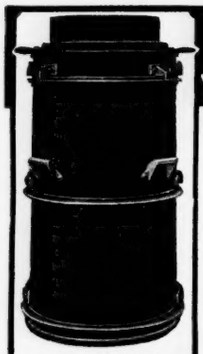
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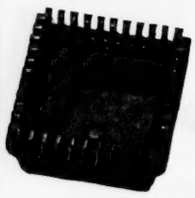
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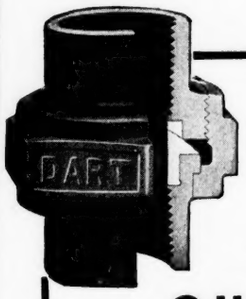

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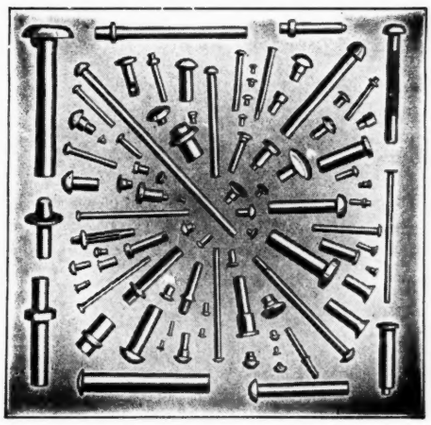

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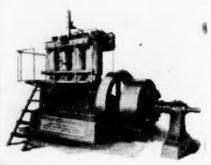

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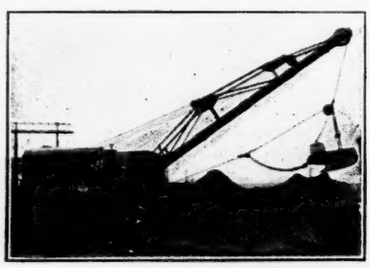

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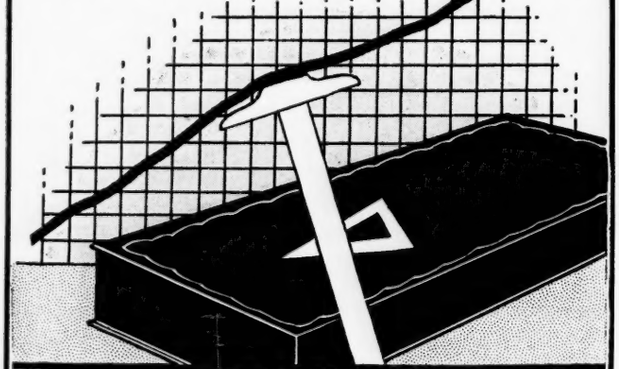

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South's Timber Resources

The Government program designed to put the nation's forest affairs on a satisfactory basis is of particular interest to the South. The most comprehensive survey yet made on the forest situation in the United States has been incorporated in a report, "A National Plan for American Forestry," published as Senate Document No. 12. It includes the latest factual data on forest land and timber resources compiled by the Forest Service since the so-called Capper Report published in 1920. Under the heading "Present and Potential Timber Resources" by R. E. Marsh, in charge, Division of Forest Economics, and W. H. Gibbons, Senior Forester, the saw timber stands of the South are shown to aggregate 200,000,000,000 board feet. This section for many years has been supplying not far from half of the softwood and hardwood lumber production of the entire country.

Much of the 121,000,000,000 board feet of softwood in the South is found in the coastal plain from Virginia to Texas, with the bulk of the remainder either on the bluffs or the uplands east of the Mississippi River or on the hills of central Alabama, west central Arkansas, and southeastern Oklahoma. The flat coastal plain is uniformly one of the cheapest in the United States for logging operations. Except for limited areas in the mountains and swamps the entire South presents few difficulties in logging, states the report. Less than one third of the softwood saw timber is old growth. Much of the second growth is comparatively young and barely of saw log proportions. Nevertheless, a large lumber cut is now coming from small, low-grade second growth.

The hardwoods in the South aggregate nearly 80,000,000,000 board feet, as compared with the annual cut in that region of 7,500,000,000. Some 35,000,000,000 board feet of hardwoods is located in that portion of the Southern Appalachians, the Piedmont Plateau, and the uplands of Arkansas, Mississippi, eastern Texas and Oklahoma. Some of the stands are distant from transportation and changing market conditions have brought about progressively heavier cullings. Of late, large numbers of portable mills have operated on cut-over lands.

About 45,000,000,000 board feet, including the better and more accessible hardwood stands, occurs in the bottomlands and swamps of the coastal plain and lower Mississippi Valley. Approximately 30,000,000,000 of this, of which more than one-third is old growth, is in the wide river bottoms of Arkansas, Louisiana, and Mississippi. Exploitation of the lower Mississippi Valley has progressed steadily since 1900 to supply hardwoods for woodworking industries.

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